

Milad Radiom

Senior Researcher (Oberassistentin)
Laboratory of Food Immunology
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ResearcherID: Q-3482-2016

Google Scholar ID: Milad Radiom

PROFESSIONAL EXPERIENCE

- 01/08/2020-present Laboratory of Food Immunology & Laboratory of Food and Soft Materials, ETH Zürich, Switzerland
Research activity:
- Biophysics of antibody-bacterial glycan interactions
- Advisors: Emma Slack & Raffaele Mezzenga
- 01/10/2018-31/07/2020 Laboratoire Matière et Systèmes Complexes, Centre Nationale de la Recherche Scientifique, Université de Paris, France
Research activity:
- Development of biomimetic models for alveolar air-tissue interface
 - Experimental modelling of interactions between intrapulmonary particles and lung fluids and cellular uptake of these particles
 - Microrheology of human pulmonary mucus and intrapulmonary particles-lung fluid mixtures
- Advisor: Jean-François Berret
- 01/08/2017-30/09/2018 School of Engineering Sciences in Chemistry, Biotechnology, and Health, KTH Royal Institute of Technology, Sweden
Research activity:
- Interfacial properties of non-halogenated ionic liquids
 - Tribology and tribotronics with non-halogenated ionic liquids
- Advisor: Mark Rutland
- 01/08/2014-31/07/2017 Department of Inorganic and Analytical Chemistry, University of Geneva, and Bio-Inspired Materials, National Center of Competence in Research, Switzerland
Research activity:
- Single molecule characterization of polyelectrolytes, neutral polymers and mechanophores (experiment, theory and modelling)
- Advisor: Michal Borkovec

EDUCATION

- 01/01/2010-31/07/2014 Ph.D. & M.Eng. in Chemical Engineering, Virginia Tech, The United States
Date of Ph.D. defense: 07/05/2014
Research activity:
- Development of correlation force spectroscopy (CFS) (Mark I to Mark IV)
 - Microrheology with CFS
 - Time-resolved single molecule characterization with CFS
- Advisor: William A. Ducker
- 01/01/2008-31/12/2010 M.Eng. in Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore
Date of M.Eng. defense: 14/05/2009
Research activity:
- Capillary wetting and interfacial phenomena in microstructures
- Advisor: Charles Yang Chun
- 23/09/2003-31/10/2007 B.Sc. in Mechanical Engineering, Amirkabir University of Technology, Iran

PUBLICATIONS

Peer-reviewed scientific journals

1. El Hamoui, O.; Yadav, I.; **Radiom, M.**; Wien, F.; Berret, J.-F.; van der Maarel, J.; Arluison, V. "Interaction between DNA and the Hfq amyloid-like region triggers a viscoelastic response" *Biomacromolecules*, 2020 (Accepted).
2. Pilkington, G.; Oleshkevych, A.; Pedraz, P.; Watanabe, S.; **Radiom, M.**; Reddy, A.B.; Vorobiev, A.; Glavatskih, S. and Rutland, M. W. "Tribotronic structuring and friction of a non-halogenated ionic liquid in a polar solvent: Effect of concentration" *PCCP*, 2020 (Accepted).
3. **Radiom, M.**; He, Y.; Peng, J.; Baeza-Squiban, A.; Berret, J. F. and Chen, Y. "Alveolar mimics with periodic strain and its effect on the cell layer formation" *Biotechnology and Bioengineering*, 2020.
Archives: <https://doi.org/10.22541/au.158204204.41664584>
4. **Radiom, M.** and Berret J.-F. "Common trends in the epidemic of Covid-19 disease" *European Physical Journal Plus*, 2020, 135, 517.
Archives: <http://arxiv.org/abs/2004.12124>; <https://hal.archives-ouvertes.fr/hal-02554301>
5. Watanabe, S.; Pilkington, G.; Oleshkevych, A.; Pedraz, P.; **Radiom, M.**; Welbourn, R.; Glavatskih, S. and Rutland, M. W. "Interfacial Structure of Non-halogenated Imidazolium Ionic Liquids at Charged Surfaces: Effect of Alkyl Chain Length" *Physical Chemistry Chemical Physics*, 2020, 22, 8450.
6. Thai, L.P.A.; Mousseau, F.; Oikonomou, E.K.; **Radiom, M.** and Berret, J.-F. "Effect of nanoparticles on the bulk shear viscosity of a lung surfactant fluid", *ACS Nano* 2020.
7. **Radiom, M.** "Ionic liquid-solid interface and applications in lubrication and energy storage", *Current Opinion in Colloid and Interface Science*, 2019, 39, 148–161.
8. **Radiom, M.**; Pedraz Carrasco, P.; Pilkington, G.; Rohlmann, P.; Glavatskih, S. and Rutland, M.W. "Anomalous Interfacial Structuring of a Non-Halogenated Ionic Liquid: Effect of Substrate and Temperature", *Colloids and Interfaces*, 2018, 2(4), 60.
9. Kozhuharov, S.; **Radiom, M.**; Maroni, P. and Borkovec M. "Persistence length of poly(vinyl amine): quantitative image analysis versus single molecule force response", *Macromolecules*, 2018, 51, 10, 3632-3639.
10. **Radiom, M.**; Maroni, P. and Wesolowski, T. A. "Size extensivity of elastic properties of alkane fragments", *Journal of Molecular Modeling*, 2018, 24, 36.
11. **Radiom, M.** and Borkovec, M. "Influence of ligand-receptor interactions on force-extension behavior within the freely jointed chain model", *Physical Review E*, 2017, 96, 062501.
12. **Radiom, M.**; Maroni, P. and Borkovec, M. "Influence of solvent quality on the force response of individual poly(styrene) polymer chains", *ACS Macro Letters*, 2017, 6, 1052-1055.
13. **Radiom, M.**; Kozhuharov, S.; Kong, P.; di Giannantonio, M.; Ayer, M.A.; Maroni, P.; Kilbinger, A.F.M.; Fromm, K.M.; Weder, C. and Borkovec, M. "Quantitative nano-characterization of polymers using atomic force microscopy", *Chimia*, 2017, 4, 195-198.
14. **Radiom, M.**; Kong, P.; Maroni, P.; Schäfer, M.; Kilbinger, A.F.M. and Borkovec, M. "Mechanically induced *cis*-to-*trans* isomerization of carbon-carbon double bond using atomic force microscopy", *Physical Chemistry Chemical Physics*, 2016, 18, 31202-31210.
15. **Radiom, M.**; Paul, M.R. and Ducker, W.A. "Dynamics of single-stranded DNA tethered to a solid", *Nanotechnology*, 2016, 27, 255701.
16. Grebikova, L.; **Radiom, M.**; Maroni, P.; Schlüter, A.D. and Borkovec, M. "Recording stretching response of single polymer chains adsorbed on solid substrates", *Polymer*, 2016, 102, 350-362.
17. **Radiom, M.**; Robbins, B.A.; Paul, M.R. and Ducker, W.A. "Hydrodynamic interactions of two nearly touching Brownian spheres in a stiff potential: effect of fluid inertia", *Physics of Fluids*, 2015, 27, 022002. *Key Scientific*

Article in Advances In Engineering: <https://advanceseng.com/hydrodynamic-interactions-of-two-nearly-touching-brownian-spheres-in-a-stiff-potential-effect-of-fluid-inertia/>

18. Robbins, B.A.; **Radiom, M.**; Ducker, W.A.; Walz, J.Y. and Paul, M.R. “The stochastic dynamics of tethered microcantilevers in a viscous fluid”, *Journal of Applied Physics*, 2014, 116, 164905.
19. **Radiom, M.**; Chan, W.K. and Yang, C.C. “Dynamic contact angle of water-based titanium oxide nanofluid”, *Nanoscale Research Letters*, 2013, 8: 282.
20. **Radiom, M.**; Honig, C.D.F.; Walz, J.Y.; Paul, M.R. and Ducker, W.A. “A correlation force spectrometer for single molecule measurements under tensile load”, *Journal of Applied Physics*, 2013, 113, 013503.
21. **Radiom, M.**; Robbins, B.A.; Honig, C.D.F.; Walz, J.Y.; Paul, M.R. and Ducker, W.A. “Rheology of fluids measured by correlation force spectroscopy”, *Review of Scientific Instruments*, 2012, 83, 043908.
22. Honig, C.D.F.; **Radiom, M.**; Robbins, B.A.; Walz, J.Y.; Paul, M.R. and Ducker, W.A. “Correlations between the thermal vibrations of two cantilevers: validation of deterministic analysis via the fluctuation-dissipation theorem”, *Applied Physics Letters*, 2012, 100, 053121.
23. **Radiom, M.**; Yang, C.C. and Chan, W.K. “Capillary filling with the effect of pneumatic pressure of trapped air”, *Microfluidics and Nanofluidics*, 2010, 9, 65-75.
24. **Radiom, M.**; Chan, W.K. and Yang, C.C. “A study of capillary flow from a pendant droplet”, *Microfluidics and Nanofluidics*, 2009, 7, 697-707.

Peer-reviewed conference proceedings and abstracts

25. Neumann, L.; Schrettl, S.; Kozhuharov, S.; **Radiom, M.**; Maroni, P.; Balog, S.; Urban, D.; Borkovec, M. and Weder, C. “Mechanically unravelling metallosupramolecular polymers”, *Abstracts of papers of the American Chemical Society*, Volume: 254, 2017.
26. Ducker, W.A.; **Radiom, M.**; Honig, C.; Robbins, B.; Paul, M. and Walz, J. “Molecule and fluid properties probed by analysis of the correlations between the fluctuations in deflection of two cantilevers”, *Abstracts of papers of the American Chemical Society*, Volume: 243, 2012.
27. **Radiom, M.**; Yang, C.C. and Chan, W.K. “Characterization of surface tension and contact angle of nanofluids”, *Proceedings of SPIE-The International Society for Optical Engineering*, 2010, 7522:75221D.

Monographs

28. **Radiom, M.** “Correlation force spectroscopy for single molecule measurements”, Springer International Publishing, Switzerland, 2015.
29. **Radiom, M.**; Yang, C.C. and Chan, W.K. “Capillary wetting and interfacial phenomena in microstructures”, Lap Lambert Academic Publishing, 2010.

Book chapters

30. **Radiom, M.** “Characterization of Single Polymer Molecules”, *In* “Atomic-force Microscopy and its Applications”, Prof. Tomasz Tański (Ed.), IntechOpen, 2018.
31. **Radiom, M.**; Yang, C.C. and Chan, W.K. “Capillary wetting of nanofluids”. *In* “Nanofluids: synthesis, properties and applications”, Murshed, S.M.S. and Nieto de Castro C.A. (Ed.), Nova Science Publishers, New York, United States, 2014.

AWARDS

- | | |
|------|---------------------------------------------------------------------------------------------------------------------------------|
| 2016 | Best Oral Presentation, Session of Polymers, Colloids, and Interfaces, Swiss Chemical Society, Switzerland |
| 2014 | Outstanding Ph.D. Research, Springer Theses Award, Springer International Publishing Switzerland |
| 2014 | Outstanding Service to Campus, 22 nd Annual University Student Leadership Awards, Virginia Tech, United States |
| 2013 | Outstanding Graduate Student Leader, 21 st Annual University Student Leadership Awards, Virginia Tech, United States |

2003 Top Freshman, Honored by the Department of Mechanical Engineering, Amirkabir University of Technology, Iran

FUNDING

- 2020 Appel à projet "Ingénierie Inspirée par la Nature", INSIS, CNRS, France, amount = 20k€ for project "Microfluidique des Surfaces Ciliées : Une Approche Biomimétique de la Clairance Mucociliaire dans les Poumons"
- 2019 Appel à Bourse Qualité Recherche, l'UFR de Physique de l'Université Paris Diderot, Paris, France, amount = 6k€ for project "Mechanical characterization of scarce fluids using a magnetic wire-based μ -rheometer across various fields"
- 2016 Travel grant for an International Conference, Swiss Chemical Society, Switzerland
- 2014 Hord Graduate fellowship, Department of Chemical Engineering, Virginia Tech, United States
- 2013 Graduate Research and Development Program grant, Graduate Student Assembly, Virginia Tech, United States, amount = 1000 \$ for project "Single molecule characterization using correlation force microscopy"
- 2012 Travel grant, Division of Fluid Dynamics, American Physical Society, United States
- 2010 Pratt fellowship, College of Engineering, Virginia Tech, United States
- 2007 A*-International Graduate Studies Scholarship, Agency for Science, Technology and Research, Singapore, 2008 to 2010

INVITED TALKS

- "Investigating mechanical forces in single (bio)molecules and in biofluids and for delivering biological mimicry", ETH-Zurich, Switzerland, March 05, 2020.
- "Biomimetic of pulmonary barriers in vitro" Laboratoire Matière et Systèmes Complexes, Université Paris Diderot, France, December 02, 2019.
- "Characterization of single polymer molecules" Laboratoire Matière et Systèmes Complexes, Université Paris Diderot, France, April 25, 2018.
- "Characterization of materials and surfaces with atomic force microscope: single macromolecules, ionic liquid tribofilm" Surface Chemistry and Corrosion Science, KTH Royal Institute of Technology, January 16, 2018.
- Technische Universität Dresden, Germany, July 06, 2017.
- Soft Matter and Wetting Laboratory, Department of Applied Physics, Aalto University, Finland, March 27, 2017.
- Polymers Laboratory, Materials Science and Engineering, École Polytechnique Fédérale de Lausanne (EPFL), Switzerland, November 11, 2016.
- "Probing Force Response of Single Macromolecules" Institute of Physical Chemistry, Albert Ludwig University of Freiburg, Germany, July 28, 2016.
- Chair of Applied Physics, Biophysics and Molecular Materials, Ludwig Maximilian University of Munich, Germany, July 7, 2016.
- EuroAFMForum, University of Geneva, Switzerland, June 22-24, 2016.
- Annual World Congress of Advanced Materials, Chongqing International Convention and Exhibition Center, China, June 6-8, 2016.
- School of Mechanical and Aerospace Engineering and School of Chemical and Biomedical Engineering, Nanyang Technological University, Singapore. June 2, 2016.
- Department of Chemistry, Ferdowsi University of Mashhad, Iran, September 27, 2015.

ORGANISATION OF CONFERENCES & SEMINARS/ CHAIRMANSHIP ACTIVITIES

Date	Title	Venue
24-26/10/2017	Annual Surface and Materials Chemistry Symposium	KTH Royal Institute of Technology & RISE Research Institutes of Sweden
6-8/06/2016	Annual World Congress of Advanced Materials, Session: Soft Matter and Colloids (Chairman)	Chongqing International Convention and Exhibition Center, China
Spring 2014	Seminar responsible: "Nano-characterization with atomic force microscopy (AFM)"	Society: Colloids and Surfaces Director of society: M. Radiom

		Virginia Tech, United States
2014	Director of the 1 st annual Colloids and Surfaces symposium, Colloids and Surfaces Invitees: Prof. Jacob Israelachvili (UC Santa Barbara, Diseased) Prof. Orlin D. Velev (North Carolina State University) Prof. Hannes Schniepp (College of William and Mary)	Virginia Tech, United States
2013-2014	Chair of Chemical Engineering Graduate Student Assembly symposium	Virginia Tech, United States
2012	Director of Research Symposium and Cultural Showcase	Virginia Tech, United States
2010-2011	Chair of Professional Development Seminar series, College of Engineering	Virginia Tech, United States

TEACHING, SUPERVISING & MENTORING ACTIVITIES

Date	Supervision or teaching	University
Starting 10/2019	PhD student: Mr. Stefan Rouach	Université Paris Diderot, France Advisor: J.F. Berret
03/2020-07/2020	Master II students: Mr. Foad Ghasemi	Université Paris Diderot, France Advisor: J.F. Berret
03-09/2019	Ms. Maria Sarkis	
03-09/2019	Mr. Romain Hénault (Now: R&D junior consultant, Altran)	
2014-2017	PhD student: Dr. Svilen Kozhuharov (Now: Micro- and nanotechnology engineer, SwissLitho AG., IBM)	University of Geneva, Switzerland Advisor: M. Borkovec
2014-2017	Travaux Pratiques de Chimie Générale	University of Geneva, Switzerland
Spring 2014	Heat transfer	Virginia Tech, United States
Fall 2013	Thermodynamics	Virginia Tech, United States
Fall 2013	Transport Phenomenon	Virginia Tech, United States
Spring 2013	Colloids and Surfaces	Virginia Tech, United States
2011	Undergraduate student: Mr. Ian Cochran (Now: Precision Surface Processing Engineer, Veeco)	Virginia Tech, United States Advisor: W.A. Ducker
01/2010-06/2010	Graduate Teaching Assistant	Department of Chemical Engineering, Virginia Tech, United States
01/2008-12/2009	Two undergraduate students from Nanyang Technological University: Mr. Jason Liu (Now: Vice President of Corporate Banking Singapore at United Overseas Bank Limited) Mr. Lionel Choo (Now: Senior Principle Analyst, Energy Policy and Planning, Singapore)	Nanyang Technological University, Singapore Advisor: C. Y. Chun

EXTRACURRICULAR ACTIVITIES & LEADERSHIP EXPERIENCES

- Founder of Colloids and Surfaces society, Virginia Tech, United States (years of activity 2013-2016)
- Chair of Graduate Research and Development Program, Graduate Student Assembly, Virginia Tech, 2011-2012
- Vice President of the Golden Key International Honour Society, Virginia Tech Chapter, 2011
- Director of Academic Affairs, Tau Beta Pi Honor Society, Virginia B Chapter, 2011
- Articles Editor, Public Knowledge Journal, Virginia Tech, 2010

REVIEWED ARTICLES FOR THE FOLLOWING JOURNALS

- ACS Macro Letters
- Langmuir
- Macromolecules
- Physica A

LANGUAGE PROFICIENCY

Persian (native); English (fluent); French (intermediate)