

Curriculum Vitae
Karine Guevorkian

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Postdoctoral Research Associate (Nov. 2006 -)
Curie Institute, Physical-chemistry Laboratory, Paris, France

Education

Ph.D. in Physics	(May 2006)	Brown University, Providence, RI, USA
Sc. M. in Physics	(May 2002)	Brown University, Providence, RI, USA
Sc. M. in Physics	(Feb. 1999)	Tehran University, Tehran, Iran
B. S. in Physics	(Dec. 1996)	Iran University of Science and Technology, Tehran, Iran

Research experience

Curie Institute, Supervisor: Prof. Françoise Brochard-Wyart

- Developed a new experimental technique based on micropipette aspiration to characterize the mechanical properties of tissues.
- Studied the viscoelastic properties of model tissues using micropipette aspiration technique. Studied the surface tension of a tissue under aspiration-induced stress.
- Studied the membrane mechanics of biomimetic systems consisting of lipid vesicles encapsulating actin cortex, using tether extrusion methods.
- Designed and developed a cell-chip using micro-contact printing technique to extract tubes on a population of cells.

Brown University Advisor: Prof. James M. Valles, Jr.

PhD dissertation:

“Experimental studies of protozoan response to intense magnetic fields and forces”.

- Designed a novel experimental technique to study the gravitational sensitivity of protozoa using magnetic forces.
- Studied the effects of intense static magnetic fields on the swimming of *Paramecium caudatum*.
- Designed and developed an in situ imaging system and apparatus suitable for investigating the swimming of protozoa in magnetic fields up to 31 Tesla.

Tehran University Advisor: Dr. Ramin Abolfath

Master’s dissertation:

“Single wide quantum wells in the presence of external electric and magnetic fields”.

- Developed computational methods to evaluate the effects of external electric and magnetic fields on a Single Wide Quantum Well using Local Density Approximation.
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Relevant experience

- **Experimental techniques:**
Micro-manipulation, soft lithography, micro-contact printing, interference microscopy (RICM), micro-fluidics. Operation and maintenance of a superconducting magnet system. Cellular culture.
 - **Computer skills:**
Programming languages: Matlab, C.
Software: Image J, XCAP, Metamorph (image analysis and particle tracking), Igor, Origin, Adobe Illustrator, LaTeX, Microsoft Office.
Operating systems: IBM PC, Macintosh.
 - **Languages:**
Fluent: English, French, Persian, Armenian.
Beginner: Italian.
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Honors and awards

- European Molecular Biology Organization (EMBO) fellowship (July 2007-July 2009).
 - Forest Award (Excellent Work Related to Experimental Apparatus), Brown University (2006).
 - Dissertation Fellowship, Brown University (Jan. 2005-May 2005).
 - Student Travel Grants for the APS March Meeting (2005, 2006).
 - Golowskie Fellowship, Brown University (Summer 2001).
 - Best Bachelor in Physics Award, Iran University of Science and Technology (1996).
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Publications

1. K. Guevorkian, M. J. Colbert, M. Durth, S. Dufour, and F. Brochard-Wyart, "Aspiration of biological viscoelastic drops", submitted.
 2. K. Guevorkian and F. Brochard-Wyart, "Polymers in Confined Geometries", P.G. de Gennes' impact on Science – volume II, World Scientific series on directions in condensed matter physics (2009).
 3. K. Guevorkian, "*Protozoan Response to Intense Magnetic Fields and Forces*", VDM Verlag Dr. Mueller e.K. (2008).
 4. C. B. Coleman et al, "*Diamagnetic levitation changes growth, cell cycle, and gene expression of Saccharomyces cerevisiae*", Biotechnol. Bioeng. 98(4): 854-63 (2007).
 5. K. Guevorkian and J. M. Valles, Jr., "*Swimming Paramecium in magnetically simulated enhanced, reduced and inverted gravity environments*". The Proceedings of the National Academy of Science of America, 103(35): 13051-13056 (2006).
 6. K. Guevorkian and J. M. Valles, Jr., "*Aligning Paramecium caudatum with static magnetic fields*", Biophysical Journal, 90: 3004-3011 (2006).
 7. K. Guevorkian and J. M. Valles, Jr., "*In situ imaging of microorganisms in intense magnetic fields*", Review of Scientific Instruments, 76: 103706 (2005).
 8. K. Guevorkian and J. M. Valles, Jr., "*Varying the effective buoyancy of cells using magnetic forces*", Applied Physics Letters 84(24): 4863-4865 (2004).
 9. J. M. Valles, Jr. and K. Guevorkian, "*Manipulating cells with static magnetic fields*", Material Processing in Magnetic Fields. Wanda H., Schneider-Muntau H. J., editors. World Scientific Publishing Co. Pte. Ltd. (2005).
 10. J. M. Valles, Jr. and K. Guevorkian, "*Low Gravity on Earth by Magnetic Levitation of Biological Material*", Journal of Gravitational Physiology 9: 11 (2002).
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Invited talks

- Montpellier II University, Laboratory of colloids, glasses and nanomaterials (LCVN), Montpellier, France (Nov. 2009).
 - Department of Cell Biology and Oncology, Consorzio Mario Negri Sud, Chieti, Italy (May, 2007).
 - Curie Institute, Physical-Chemistry Laboratory, Paris, France (2006).
 - Charles Sadron Institute, Louis Pasteur University, Strasbourg, France (2006).
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Contributions

- Poster presentation at EMBO conference series, Primosten, Croatia (2009).
 - Oral contribution at Cell-Tiss Research Group, Strasbourg (2009).
 - Poster presentation at Julich Soft Matter Days, Bonn, Germany (2008).
 - Poster presentation at Pierre-Gilles de Gennes winter school, Cargèse, France (2008).
 - Poster presentation at Cell-Tiss Research Group workshop, Arles, France (2007).
 - Oral contribution at American Physical Society March Meeting (2004, 2005, 2006, 2007, 2008, 2009).
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Teaching experience

- Instructed introductory physics laboratory courses. Graded laboratory reports, proctored introductory physics exams and graded quizzes.
 - Directed undergraduate and Master's level students in laboratory research.
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