

Curriculum Vitae

EDUCATIONAL BACKGROUND:

Ph.D. in Physics (1995-1999) Universidad de Cuyo and Instituto Balseiro
(National Commission of Atomic Energy), Bariloche, Argentina.

M.Sc. in Physics (1991-1994) Universidad de Cuyo and Instituto Balseiro
(National Commission of Atomic Energy), Bariloche, Argentina.

Undergraduate Student in Engineering (1988-1991)

School of Engineering, University of Buenos Aires, Argentina.

PROFESSIONAL EXPERIENCE:

Assistant Professor (2005-)

Chemical & Biomolecular Engineering Department, Johns Hopkins University.

Research Associate (1999-2005)

Advisors: Prof. A. Acrivos and Prof. Joel Koplik, The Levich Institute, CCNY.

Doctoral Student (1995-1999)

Advisors: Dr. M. Rosen & Dr. H. S. Wio. University of Buenos Aires & Instituto Balseiro.

M. Sc. in Physics (1991-1994) Advisor: Dr. H. S. Wio. Instituto Balseiro.

REFERRED JOURNAL PUBLICATIONS:

1. *Separation of suspended particles by arrays of obstacles in microfluidic devices*, Z. Li, G. Drazer, Phys. Rev. Lett. **98**, 050602 (2007).
Virtual J. Nanoscale Sci. &Tech. **15**, 07 (2007)
Virtual J. Biological Phys. Research. **13**, 04 (2007);
(arXiv:cond-mat/0606732).
2. *Fluid enhancement of particle transport in nanochannels*, Z. Li, G. Drazer, Phys. Fluids **18**, 117102 (2006);
Virtual J. Nanoscale Sci. &Tech. **14**, 21 (2006).
3. *Flow channeling in a single fracture induced by shear displacement*, H. Auradou, G. Drazer, A. Boschan, J.P. Hulin and J. Koplik, Geothermics **35**, 576 (2006).
4. *Lattice-Boltzmann method for non-Newtonian fluid flows*, S. Gabbanelli, G. Drazer and J. Koplik, Phys. Rev. E **72**, 046312 (2005).
(arXiv:cond-mat/0506768).
5. *Hysteresis, force oscillations and non-equilibrium effects in the adhesion of spherical nanoparticles to atomically smooth surfaces*, G. Drazer, B. Khusid, J. Koplik and A. Acrivos, Phys. Rev. Lett. **95** 016102 (2005); Virtual J. Nanoscale Sci. & Tech. **12**, #02 (2004);
(arXiv:cond-mat/0502360).
6. *Permeability anisotropy induced by shear-displacement in fractures*, H. Auradou, G. Drazer, J. P. Hulin and J. Koplik, Water Resour. Res. **41**, W09423 (2005).
(arXiv:cond-mat/0412586).
7. *Wetting and particle adsorption in nanoflows*, G. Drazer, B. Khusid, J. Koplik and A. Acrivos, Phys. Fluids **17** 017102 (2005);
Virtual J. Nanoscale Sci. & Tech. **10**, #24 (2004);
(arXiv:cond-mat/0406291).
8. *Microstructure and velocity fluctuations in sheared suspensions*, G. Drazer, J. Koplik, B. Khusid and A. Acrivos, J. Fluid Mech. **511**, 237-263 (2004).
(arXiv:cond-mat/0307478).

9. *Self-Affine Fronts in Self-Affine Fractures: Large and Small-Scale Structure*, G. Drazer, J. Koplik, H. Auradou and J.P. Hulin, Phys. Rev. Lett. **92**, 014501 (2004). (arXiv:cond-mat/0307545.)
10. *Adsorption Phenomena in the Transport of a Colloidal Particle through a Nanochannel Containing a Partially Wetting Fluid*, G. Drazer, J. Koplik, B. Khusid and A. Acrivos, Phys. Rev. Lett. **89**, 244501 (2002); Virtual J. Nanoscale Sci. & Tech. **6**, #24 (2002); (arXiv:cond-mat/0206235).
11. *Transport in rough self-affine fractures*, G. Drazer and J. Koplik, Phys. Rev. E, **66**, 026303 (2002), (arXiv:cond-mat/0110213).
12. *Deterministic and stochastic behaviour of non-Brownian spheres in sheared suspensions*, G. Drazer, J. Koplik, B. Khusid and A. Acrivos, J. Fluid Mech. **460**, 307-335 (2002). (arXiv:cond-mat/0105415).
13. *Tracer dispersion in two-dimensional rough fractures*, G. Drazer and J. Koplik, Phys. Rev. E, **63**, 056104 (2001). (arXiv:cond-mat/0010369.)
14. *Exact time-dependent solutions for anomalous diffusion with absorption*, G. Drazer, H. S. Wio and C. Tsallis, Granular Matter, **3**, 105 (2001).
15. *Permeability of self-affine rough fractures*, G. Drazer and J. Koplik, Phys. Rev. E, **62**, 8076 (2000). (arXiv:cond-mat/0006287.)
16. *An analytical study of stochastic resonance in a monostable non-harmonic system*, G. Drazer, D. Strier and H.S. Wio, Phys. A, **283**, 234 (2000).
17. *Stable-unstable crossover in non-Newtonian radial Hele-Shaw flow*, S. Obernauer, G. Drazer and M. Rosen, Phys. A, **283**, 167 (2000).
18. *Anomalous transport in activated carbon porous samples: power-law trapping-time distributions*, G. Drazer, M. Rosen and D. Zanette, Phys. A, **283**, 161 (2000).
19. *Anomalous diffusion with absorption: Exact time-dependent solutions through a nonextensive thermostistical Ansatz*, G. Drazer, H. S. Wio and C. Tsallis, Phys. Rev. E, **61**, 1417 (2000). (arXiv:cond-mat/9910086.)
20. *Experimental evidence of power-law trapping-time distributions in porous media*, G. Drazer and D. H. Zanette, Phys. Rev. E, **60**, 5858 (1999).
21. *Exact expression for the diffusion propagator in a family of time-dependent anharmonic potentials*, J. A. Giampaoli, D. E. Strier, C. Batista, G. Drazer, H. S. Wio, Phys. Rev. E, **60**, 2540 (1999). (arXiv:cond-mat/9910140.)
22. *Tracer dispersion in double porosity activated carbon packings*, G. Drazer, L. Bruno, R. Chertcoff, M. Rosen and J. P. Hulin, Chem. Eng. Sci., **19**, 4137 (1999).
23. *Concentration dependence of diffusion-adsorption rate in activated carbon*, G. Drazer, L. Bruno, R. Chertcoff, M. Rosen, Chem. Eng. Sci., **19**, 4285 (1999).
24. *Tracer dispersion in double porosity porous media with nonlinear adsorption*, G. Drazer, R. Chertcoff, L. Bruno, M. Rosen, Physica A, **257**, 371, (1998).
25. *Global Stability of stationary Patterns for activator-inhibitor system with fast inhibitor: the non-equilibrium potential.*, G. Drazer and H. S. Wio, Physica A, **240**, 571, (1997).
26. *Space-Time Transformations within the Path-Integral Approach to Stochastic Processes*, C. D. Batista, G. Drazer, D. Reidel, H. S. Wio, Phys. Rev. E, **54**, 86, (1996).

Conference and Workshop Publications:

27. *Multiscale Modeling of Nanoflows*, G. Drazer, B. Khusid, J. Koplik and A. Acrivos, to appear in Technical Proceedings of the 2005 Nanotechnology Conference, Computational

Publications, 2005.

28. *Adsorption phenomena in particle transport through a fluid-filled nanochannel*, G. Drazer, B. Khusid, J. Koplik and A. Acrivos, Technical Proceedings of the 2003 Nanotechnology Conference, pp. 142-143, Computational Publications, 2003.
29. *Squeezing flow of particles and large molecules suspended in a liquid through nanochannels*, A. Acrivos, B. Khusid, J. Koplik and G. Drazer, Technical Proceedings of the Second International Conference on Computational Nanoscience and Nanotechnology, pp. 97-98, Computational Publications, 2002; and Technical Proceedings of the Fifth International Conference on Modeling and Simulation of Microsystems, pp. 66-67, Computational Publications 2002.
30. *Dispersion in activated carbon packed beds: adsorbent double porosity media*, G. Drazer, L. Bruno, R. Chertcoff and M. Rosen, Fundamentals of Adsorption VI, pp. 727-732, Elsevier, Paris, 1998.

PRESENTATIONS (NATIONAL AND INTERNATIONAL MEETINGS):

Selected and Invited presentations:

1. *Separation of Suspended Particles by Asymmetric Arrays of Obstacles in Microfluidic Devices*, Z. Li and G. Drazer, Annual AIChE Meeting, San Francisco, 2006.
2. *The effect of fluid density on the transport of particles in nanochannels*, Z. Li and G. Drazer, American Physical Society, 2006 March Meeting, Baltimore, March 14th, 2006.
3. *Hysteresis, force oscillations and non-equilibrium effects in the adhesion of nanoparticles to atomically smooth surfaces*, G. Drazer, J. Koplik, B. Khusid and A. Acrivos, Annual AIChE Meeting, Cincinnati, Ohio, October 30-November 4, 2005.
4. *Multiscale Modeling of Nanoflows*, G. Drazer, A. Acrivos, B. Khusid and J. Koplik, 2005 NSTI Nanotechnology Conference, Anaheim, California, May 8-12, 2005.
5. *Anisotropic transport in self-affine fractures*, G. Drazer, J. Koplik, J. P. Hulin and H. Auradou, 57th Annual Meeting of the Division of Fluid Dynamics, Seattle, November 21-23, 2004.
6. *Permeability and Tracer Transport in Self-affine Fractures*, G. Drazer and J. Koplik, Research Symposium on "Flow and Transport: characterization and Modeling from Pore to Reservoir Scales", organized by the Geosciences Research Program, Office of Basic Energy Sciences, Department of Energy, Gaithersburg, September 25-25, 2004
7. *The use of Molecular Simulations in the study of Micro/Nano fluidics: Progress, Applications, and Challenges*, G. Drazer, Pan-American Advanced Studies Institutes on Micro Electro Mechanical systems (MEMS), Bariloche, Argentina, June 21-30, 2004.
8. *Velocity fluctuations in non-Brownian suspensions undergoing simple shear flows*, A. Acrivos, G. Drazer, J. Koplik and B. Khusid, XXI International Congress of Theoretical and Applied Mechanics, Warsaw, Poland, 15-21 August, 2004.
9. *Velocity fluctuations in sheared suspensions of neutrally buoyant, non-Brownian spheres*, G. Drazer, J. Koplik, B. Khusid and A. Acrivos, 56th Annual Meeting of the Division of Fluid Dynamics, New Jersey, November 23-25, 2003.
10. *Microstructure and Velocity Fluctuations in Sheared Suspensions*, G. Drazer, B. Khusid, J. Koplik and A. Acrivos, Annual AIChE Meeting, San Francisco, California, November 16-21, 2003.
11. *Flow of nanometer-size spheroids through a fluid-filled cylindrical tube*, G. Drazer, B. Khusid, J. Koplik and A. Acrivos, Annual AIChE Meeting, San Francisco, California, November 16-21, 2003.
12. *The translocation of a particle through a flow-filled nanochannel*, G. Drazer, J. Koplik, A. Acrivos and B. Khusid, 7th US National Congress on Computational Mechanics, Albuquerque, New Mexico, July 27-31, 2003.

13. *Trapping of a colloidal particle in fluid-filled nanochannels*, G. Drazer, J. Koplik, A. Acrivos and B. Khusid, Second M.I.T. Conference on Computational Fluid and Solid Mechanics, Massachusetts, June 17-20, 2003.
14. *Transport properties of a narrow self-affine fracture*, H. Auradou, G. Drazer, J. P. Hulin and J. Koplik, European Geophysical Society, American Geophysical Union, European Union of Geosciences, Joint Assembly, Nice, France, April 06-11, 2003.
15. *Adsorption Phenomena in the Transport of a Colloidal Particle through a Nanochannel Containing a Partially Wetting Fluid*, G. Drazer, J. Koplik, A. Acrivos and B. Khusid, 88th Statistical Mechanics Conference, Rutgers University, New Jersey, December 15-17, 2002.
16. *Adsorption of colloidal particles traveling through a nanochannel containing a partially wetting fluid*, G. Drazer, B. Khusid, J. Koplik and A. Acrivos, 55th Annual Meeting of the Division of Fluid Dynamics, Texas, November 24-26, 2002.
17. *Flow of Particles Through A Fluid-filled Nanochannel*, G. Drazer, B. Khusid, J. Koplik and A. Acrivos, Annual AIChE Meeting, Indianapolis, Indiana, November 3-8, 2002.
18. *Transport properties of self-affine rough fractures*, G. Drazer and J. Koplik, 54th Annual Meeting of the Division of Fluid Dynamics, California, November 18-20, 2001.
19. *Dynamic simulation of sheared suspensions of non-Brownian spheres*, A. Acrivos, G. Drazer, B. Khusid, J. Koplik and M. Marchioro, 73rd Annual Meeting of The Society of Rheology, Maryland, October 21-25, 2001.
20. *Transport properties of self-affine two-dimensional rough fractures*, G. Drazer and J. Koplik, 53rd Annual Meeting of the Division of Fluid Dynamics, Washington, DC, November 19 - 21, 2000.
21. *Stability crossover in non-Newtonian radial Hele-Shaw flow*, S. Obernauer, G. Drazer and M. Rosen, 13th MEDYFINOL conference and 6th Latin American Workshop on Nonlinear Phenomena, Huerta Grande, Córdoba, Argentina, October 12-16, 1999.
22. *Anomalous transport in activated carbon porous samples: power-law trapping-time distributions*, G. Drazer, M. Rosen and D. Zanette, 13th MEDYFINOL conference and 6th Latin American Workshop on Nonlinear Phenomena, Huerta Grande, Córdoba, Argentina, October 12-16, 1999.
23. *Signal-to-noise ratio enhancement in monostable systems*, G. Drazer, D. E. Strier and H. S. Wio, Workshop on the Dynamics of Nonequilibrium Systems, ICTP, Trieste, Italy, August 16-27, 1999.
24. *Dispersion in activated carbon packed beds: adsorbent double porosity media*, G. Drazer, R. Chertcoff, L. Bruno, M. Rosen, Fundamental of Adsorption VI, Giens, France, May 1998.

Selected abstracts

25. *Squeezing flow of particles and large molecules suspended in a liquid through nanochannels*, A. Acrivos, B. Khusid, J. Koplik and G. Drazer, 1st International Conference and School Nanoscale/Molecular Mechanics, Hawaii, May 12-17, 2002.
26. *Exact results for stochastic resonance in a monostable system*, G. Drazer, D. Strier and H.S. Wio, 13th MEDYFINOL conference and 6th Latin American Workshop on Nonlinear Phenomena, Huerta Grande, Córdoba, Argentina, October 12-16, 1999.
27. *Hydrodynamic dispersion in an adsorbent porous medium*, S. Gurevich, N. Nerone, G. Drazer, R. Chertcoff, M. Rosen, 83rd National Meeting of Physics, La Plata, Argentina, September 1998.
28. *Transit time distributions of a tracer in activated carbon porous media*, R. Chertcoff, L. Bruno, G. Drazer, M. Rosen, V International symposium on recent advances in mechanics and physics of fluids, Tunuyan, Argentina, November 1997.
29. *Tracer dispersion in double porosity porous media with nonlinear adsorption*, G. Drazer, R. Chertcoff, L. Bruno, M. Rosen, 11th MEDYFINOL conference and 4th Latin American

Workshop on Nonlinear Phenomena, Canela, Brasil, October 1997.

30. *Hydrodynamic dispersion in activated carbon double porosity media*, G. Drazer, M. Rosen, 82nd National meeting of Physics, San Luis, Argentina, September 1997.
31. *Determination of radioactive-tracer transit-time distributions in activated carbon porous samples through dispersion measurements*, G. Drazer, R. Chertcoff, L. Bruno, M. Rosen, 82th National meeting of Physics, San Luis, Argentina, September 1997.
32. *Complementary methods to measure adsorption in activated carbons*, S. Boeykens, L. Bruno, G. Drazer, N. Temprano, X National physicochemical conference, Tucuman, Argentina, April 1997.
33. *Diffusion-adsorption experiments in activated carbon grains*, G. Drazer, R. Chertcoff, L. Bruno, M. Rosen, S. Gabbanelli, X National physicochemical conference, Tucuman, Argentina, April 1997.
34. *Non-Gaussian Tracer Dispersion in Double-Porosity Media*, G. Drazer, L. Bruno, R. Chertcoff, M. Rosen, 10th MEDYFINOL conference, Tucuman, Argentina, September 1996.
35. *Tracer flow in activated carbon porous samples*, L. Bruno, G. Drazer, R. Chertcoff, M. Rosen, 81st National meeting of Physics, Tandil, September 1996.
36. *Space-Time transformations within the path integral approach to stochastic processes*, C. D. Batista, G. Drazer, D. Reidel, H. S. Wio, 9th MEDYFINOL conference and 4th Latin American workshop on nonlinear Phenomena, Bariloche, September 1995.
37. *Adsorption influence on the dispersion process in activated carbon porous samples*, L. Bruno, G. Drazer, R. Chertcoff, 80th National meeting of Physics, Bariloche, Argentina, October 1995.
38. *Global Stability and stationary spatial-structures in an activator-inhibitor system in the fast inhibitor limit, non-equilibrium potentials*, G. Drazer, H. S. Wio, 80th National meeting of Physics, Bariloche, Argentina, October 1995.