

## GEORGE D. BACHAND

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### Education

<i>Undergraduate:</i>	Elizabethtown College Elizabethtown, PA	Biology	B.S.	1992
<i>Graduate:</i>	State University of New York Syracuse, NY	Environmental Biology	Ph.D.	1997
<i>Other:</i>	State University of New York Syracuse, NY	Immunology, Post-doctoral		1997

### Appointments

CINT Scientist, Sandia National Laboratories, Mar. 2006 - present

Member of the Technical Staff, Sandia National Laboratories, March 2001 - present

Adjunct Assistant Professor, University of New Mexico, January 2006 - present

Research Associate, Cornell University, March 1998 – February 2001

### Publications

1. Carroll-Portillo, A., and Bachand, G.D. (2008). Directed attachment of antibodies to kinesin-powered molecular shuttles. *Biotechnol. Bioeng.* 104(6): 1182-1188.
2. Carroll-Portillo, A., Bachand, M., Greene, A.C., and Bachand, G.D. (2009). Capture and transport of protein analytes with kinesin-based nanoharvesters. *Small* 5(16): 1835-1840.
3. Bachand, G.D., Hess, H., Ratna, B., Satir, P., and Vogel, V. (2009). "Smart Dust" biosensors powered by biomolecular motors. *Lab Chip* 9(12): 1661 – 1666 (*Invited review*).
4. Tucker, R. Saha, A., Katira, P., Bachand, M., Bachand, G.D., and Hess, H. (2009). Temperature-compensation for hybrid devices: Kinesin's  $K_m$  is temperature-independent. *Small* 5(11): 1279-1282.
5. Rios, L. and Bachand, G.D. (2009). Multiplex transport and detection of cytokines using kinesin-driven molecular shuttles. *Lab Chip* 9: 1005-1010.
6. Liu, H., Spoerke, E.D., Bachand, M., Koch, S.J., Bunker, B.C., and Bachand, G.D. (2008). Dynamic self-assembly of nanocomposite structures through the interaction of thermodynamic and energy-dissipating processes. *Adv. Mater.* 20(23): 4476–4481.
7. Spoerke, E.D., Bachand, G.D., Liu, J., Sasaki, D.Y., and Bunker, B.C. (2008). Assembly of polar-oriented synthetic microtubule organizing centers. *Langmuir* 24(14): 7039-7043.
8. Greene, A.C., Trent, A.M., and Bachand, G.D. (2008). Controlling kinesin motor transport through an engineered metal switch. *Biotechnol. Bioeng.* 101(3): 478-486.
9. Liu, H., Bachand, G.D., Kim, H., Hayden, C.C., and Sasaki, D.Y. (2008). "Lipid nanotube formation via streptavidin-membrane binding interactions." *Langmuir* 24: 3686-3689.
10. Rivera, S.B., Koch, S.J., Bauer, J.M., Edwards, J.M., and Bachand, G.D. (2007). Temperature dependent properties of a kinesin-3 motor protein from *Thermomyces lanuginosus*. *Fungal Genet. Biol.* 44: 1170-1179.

**Collaborators:** Henry Hess (Columbia University), Banahalli Ratna (Naval Research Laboratory), Peter Satir (Albert Einstein College of Medicine), Viola Vogel (Swiss Federal Institute of Technology), Alan Barhorst (Texas Tech University), Andy Boal (Miox Corp.), James Brozik (Washington State University), Darryl Sasaki (Sandia National Laboratories), Bruce Bunker (Sandia National Laboratories), Eric Spoerke (Sandia National Laboratories), Conrad James (Sandia National Laboratories), Susan Brozik (Sandia National Laboratories), Dale Huber (Sandia National Laboratories), Gabriel Montano (Los Alamos National Laboratory), Andy Shreve (Los Alamos National Laboratories)

**Thesis Advisor and Postgraduate – Scholar Sponsor:** *Postdoctoral appointees sponsored:* Susan Rivera, Steven Koch, Amanda Carroll-Portillo, Haiqing Liu, Lynette Rios; *Graduate students mentored:* Hernesto Tellez; *Undergraduate research students mentored:* Trisha Cox, Nicholas Miller, Peter Chen, Amanda Trent, Adrienne Greene, Brandon Heimer, J. Matthew Edwards

### **Synergistic Activities**

Professional Engagement: Invited participant, Second Indo-American Frontiers of Engineering Symposium, National Academy of Engineering (February 2008); Invited participant, “Frontiers in Engineering,” National Academy of Engineering, Dearborn, MI (2006); Chair and Lead Organizer “Hybrid Interfaces & Integrative Nanobiotechnology” Symposium, American Association for the Advancement of Science Annual Meeting, St. Louis, MO (2006).

Proposal Reviewer: Office of Basic Energy Sciences, Department of Energy; National Science Foundation; National Aeronautical Space Agency; Petroleum Research Foundation;

Journal Referee: *Nanotechnology, Nano Letters, Small, Journal of Nanoscience and Nanotechnology, Nature Nanotechnology, and Biochemistry*