

Joshua D. Alper

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Education

Massachusetts Institute of Technology; Cambridge, MA

Ph.D. in Mechanical Engineering – February 2010

Tufts University; Medford, MA

M.Eng. in Mechanical Engineering – May 2002

University of Rochester; Rochester, NY

B.S. in Mechanical Engineering – May 1999

Minor in Economics

Certificate in Business Management

Academic Appointments

Department of Physics and Astronomy, Clemson University; Clemson, SC

Assistant Professor – August 2015 – Present

Howard Lab, Molecular Biophysics and Biochemistry, Yale; New Haven, CT and Max Planck Institute for Molecular Cell Biology and Genetics; Dresden, Germany

Advisor: Dr. Jonathon Howard

Yale Postdoctoral Fellow – January 2013 – July 2015

Marie Curie Research Fellow – November 2011 – October 2013

Max Planck Postdoctoral Fellow – January 2010 – October 2011

Hamad-Schifferli Group, Mechanical and Biological Engineering Departments, MIT; Cambridge, MA

Advisor: Dr. Kimberly Hamad-Schifferli

Graduate Research Assistant – September 2004 – December 2009

Saigal Group, Mechanical Engineering Department, Tufts University; Medford, MA

Advisor: Dr. Anil Saigal

Part-time Graduate Research Assistant – September 2001 – May 2002

Industry Research Experience

Teradyne, Inc.; Boston, MA

Mechanical Engineer III – June 1999 – August 2004

Designed and developed mechanical subsystems of semiconductor test equipment for the Catalyst, Tiger, and FLEX series of testers.

Funding Received

Marie Curie International Incoming Fellowship

FP7-People-2010-IIF

November 2011 – October 2013 225,945 EUR

Publications

Journal Articles

1. **Alper, J.**, Decker, F., Agana, B. and Howard, J. The Motility of Axonemal Dynein Is Regulated by the Tubulin Code. *Biophysical Journal* **107**, 2872–2880 (2014).
2. **Alper, J.**, Tovar, M. and Howard, J. Displacement-Weighted Velocity Analysis of Gliding Assays Reveals that Chlamydomonas Axonemal Dynein Preferentially Moves Conspecific Microtubules. *Biophysical Journal* **104**, 1989–1998 (2013).
3. Widlund, P., Podolski, M., Reber, S., **Alper, J.**, Storch, M., Hyman, A., Howard, J. and Drechsel, D. One-step purification of assembly-competent tubulin from diverse eukaryotic sources. *Molecular Biology of the Cell* **23**, 4393–4401 (2012).
4. **Alper, J.**, and Hamad-Schifferli, K.. Effect of Ligands on Thermal Dissipation from Gold Nanorods. *Langmuir* **26**(6), 3786-3789 (2010).
5. **Alper, J.**, Crespo, M., and Hamad-Schifferli, K. Release Mechanism of Octadecyl Rhodamine B Chloride from Au Nanorods by Ultrafast Laser Pulses. *Journal of Physical Chemistry C* **113**(15), 5967-5973 (2009).
6. Schmidt, A.*, **Alper, J.***, Chiesa, M., Das, S., Chen, G., and Hamad-Schifferli, K. Probing the Gold Nanorod-Ligand-Solvent Interface by Plasmonic Absorption and Thermal Decay. *Journal of Physical Chemistry C* **112**(35), 13320-13323 (2008).
* These authors contributed equally to this work.
7. Wijaya, A., Brown, K., **Alper, J.**, and Hamad-Schifferli, K. Magnetic Field Heating Study of Fe-Doped Au Nanoparticles. *Journal of Magnetism and Magnetic Materials* **309**(1), 15 (2007).

Reviews, Commentaries, and Invited Chapter Contributions

1. **Alper, J.**, Geyer, V., Mukundan, V. and Howard, J. Reconstitution of Flagellar Sliding. *Methods in Enzymology* **524**, 343–369 (2013).
2. **Alper, J.**, and Howard, J. Hybrid four-headed myosin motor engineered with antagonistic motor domains. *Proceedings of the National Academy of Sciences of the United States of America* **108**(38), 15663-15664 (2011).

Refereed Conference Proceedings

1. **Alper, J.**, and Hamad-Schifferli, K. Biomolecular Activity Switch: An Application of Metallic Nanoparticle Plasmon Resonance and Femtosecond Pulsed Lasers. Proceedings of the 2008 ASME International Mechanical Engineering Congress and Exposition, Boston, MA; American Society of Mechanical Engineers, 68014 (2008).
2. **Alper, J.**, Schmidt, A., and Hamad-Schifferli, K. Thermal Transport From Gold Nanorod to Solvent, An Investigation of Ligand and Nanorod Size Effects By Ultrafast Laser Spectroscopy. Proceedings of the 2008 ASME International Mechanical Engineering Congress and Exposition, Boston, MA; American Society of Mechanical Engineers, 67266 (2008).
3. **Alper, J.**, Wijaya, A., Crespo, M., DeFlores, L., Tokmakoff, A., and Hamad-Schifferli, K. Biomolecular activity switch: an application of metallic nanoparticle plasmon resonance. Nanotechnology 2008: Life Sciences, Medicine & Biomaterials - Technical Proceedings of the 2008 NSTI Nanotechnology Conference and Trade Show, Boston, MA; Nano Science and Technology Institute, 2: 206 – 209 (2008).
4. **Alper, J.**, Crespo, M., Jones, K., Tokmakoff, A., and Hamad-Schifferli, K. Biomolecular Activity Switch Actuated By Ultrafast Pulsed Laser Irradiation of Gold

- Nanorods. Proceedings of the ASME 2008 Summer Bioengineering Conference; American Society of Mechanical Engineers, 193097 (2008).
5. **Alper, J.**, and Saigal, A. Plastic Modulus of Engineering Materials for Finite Element Analysis Obtained by Hardness Testing. Proceedings of the MDP-8 Cairo University Conference on Mechanical Design and Production, Cairo, Egypt, (2004).

Talks

1. *University of Texas at San Antonio*, San Antonio, TX; Department of Biomedical Engineering; December 2014.
2. *Clemson University*, Clemson, SC; Department of Physics and Astronomy; November 2014.
3. *Max Planck Institute of Molecular Cell Biology and Genetics*, Dresden, Germany; April 2013.
4. *Yale University*, New Haven, CT; Department of Molecular Biophysics and Biochemistry; November 2012.
5. *BMES 2012 Annual Meeting*, Atlanta, GA; Biomedical Engineering Society; October 2012.
6. *15th International Conference on the Cell and Molecular Biology of Chlamydomonas*, Potsdam, Germany; June 2012.
7. *European Molecular Biology Laboratory*, Heidelberg, Germany; Biology and Biophysics; October 2010.
8. *Mechanobiology of Mitosis*, Hvar, Croatia; September 2010.
9. *University of Rochester*, Rochester, NY; Biomedical Engineering Department; August 2009.
10. *University of Pittsburgh*, Pittsburgh, PA; McGowan Institute for Regenerative Medicine; August 2009.
11. *University of Virginia*, Charlottesville, VA; Biomedical Engineering Department; July 2009.
12. *Max Planck Institute of Molecular Cell Biology and Genetics*, Dresden, Germany; July 2009.
13. *Harvard University*, Cambridge, MA; Harvard Medical School/Brigham and Women's Hospital; June 2009.
14. *MRS Fall Meeting*, Boston, MA; Materials Research Society; December 2008.
15. *ASME International Mechanical Engineering Congress and Exposition*, Boston, MA; American Society of Mechanical Engineers, November 2008.
16. *NSTI Nanotech 2008*, Boston, MA; Nano Science and Technology Institute, June 2008.
17. *Massachusetts Institute of Technology*, Cambridge, MA; Mechanical Engineering Department, March 2007.
18. *MRS Fall Meeting*, Boston, MA; Materials Research Society, November 2007.
19. *ACS Annual Meeting*, Boston, MA; American Chemical Society, August 2007.

Professional and Honor Society Memberships

American Association for the Advancement of Science
American Society of Cell Biology
American Society of Mechanical Engineers
Biomedical Engineering Society
Biophysical Society
Phi Beta Kappa Honor Society

Tau Beta Pi Engineering Honor Society

Awards and Honors

Marie Curie International Incoming Fellowship (2011 – 2013)

Bausch and Lomb Scholarship (1995 - 1999)

University of Rochester Excellence Scholarship (1995 - 1999)