

# John P. Sadowski, Ph.D.

**I combine technical expertise in nanotechnology and other emerging technologies with broad experience in policy, outreach, and entrepreneurship. My research background includes creating novel biomolecular nanosensors and smart materials, and computational methods for designing them.**

## Key Skills

- 14 years of laboratory research experience at Caltech, Harvard, and elsewhere, focusing on nanotechnology, DNA biophysics, and chemistry
- Robust ability to communicate complex topics simply to both technical and lay audiences, including peer-reviewed journal articles, policy position papers, and Wikipedia articles
- Robust oral presentation ability, including technical presentations, training workshops, and theater
- Ability to independently initiate and execute projects and bring in new partners through networking
- Record of success in securing funding through individual research fellowships

## Professional Experience

**U.S. National Institute for Occupational Safety and Health** Office of the Director & Division of Science Integration  
Technical Analyst II (2017–2021); Technical Analyst IV (2021–present)

- Provided expert advice and analysis on NIOSH programs on health and safety implications of emerging technologies, including nanotechnology, synthetic biology, and artificial intelligence
- Wrote or expanded over 50 high-visibility Wikipedia articles on health and safety topics; mentored scientists and staff in writing 8 articles
- Coordinated and presented training workshops for NIOSH and international partner institutions

## **Celunda Research, LLC**

Co-founder and Chief Scientific Officer (2017–2018)

- Co-founded startup company to prototype a novel graphene-based emitter of terahertz radiation
- Secured funding for customer discovery through National Science Foundation I-Corps program

**U.S. Naval Research Laboratory** Center for Biomolecular Science and Engineering (2014–2015)

Postdoctoral Research Fellow

- Initiated project to design dynamic DNA nanostructures incorporating optically active molecules
- Secured funding through American Society for Engineering Education Postdoctoral Fellowship

**National Academy of Sciences** Board on Chemical Science and Technology (2014)

Mirzayan Science and Technology Policy Fellow

- Awarded competitive fellowship for early-career scientists to participate in science policy
- Staff contributor to report on industrialization of synthetic biology for chemical manufacturing

**Harvard University** Department of Chemistry and Chemical Biology (2007–2013)

Graduate Student in Chemistry — *Advisors: Prof. Peng Yin, Prof. David Liu*

- Successfully created first well-defined 3D nanostructure using dynamic DNA self-assembly
- Programmed a general software tool to design sequences for large, complex nucleic acid systems
- Investigated creating macroscopic programmable matter using designed surface DNA interactions
- Secured funding through NSF Graduate Research Fellowship and Buttonwood Graduate Scholarship

**California Institute of Technology** Department of Chemistry (2003–2007)

Undergraduate Research Fellow — *Advisors: Prof. Peter Dervan, Prof. James Heath*

- Initiated project to create and characterize new DNA–organic complexes for molecular self-assembly
- Awarded Caltech Axline Merit Award (4 year full-ride scholarship)

**New York University** Department of Chemistry (2002–2003)

Visiting High School Student Researcher — *Advisor: Prof. Nadrian Seeman*

- Initiated project to create DNA nanostructures for potential use in molecular electronics
- Won national finalist awards in Intel, Siemens–Westinghouse, and JSHS research competitions

### **Education**

Harvard University: Ph.D., Chemistry, 2013; M.A., Chemistry, 2009

California Institute of Technology: B.S. with Honor, Chemistry; minor in History & Philosophy of Science, 2007

### **Other Interests**

- Treasurer and Member of Board of Directors of Wikimedia District of Columbia local chapter, a 501(c)(3) organization
- Acted in 7 musicals and 9 plays at Caltech, MIT, and elsewhere; stage manager for 1 musical; co-wrote, directed, edited, and acted in short film
- Performance experience in piano, clarinet, ensemble chorus, and swing dance
- Student government experience in high school, college, and graduate school; includes managing process to create new constitutions to create an acceptable consensus on controversial issues
- Extensive travel experience to 31 U.S. states, 12 European countries, Japan, and South Africa
- Contributor to Wikipedia since 2006. Highlights include:
  - Made over 26,000 edits, mostly on nanotechnology, biomolecular structure, and science policy.
  - Contributed to 148 articles that appeared in Main Page's *Did you know* column.
  - Contributed about 4,500 images, mainly photographs of historic buildings and bridges.

### **Publications**

#### ***Peer-Reviewed Publications***

- 1. Understanding Förster resonance energy transfer in the sheet regime with DNA brick-based dye networks**  
D. Mathur, A. Samanta, M. G. Ancona, S. A. Díaz, Y. Kim, J. S. Melinger, E. R. Goldman, J. P. Sadowski, L. L. Ong, P. Yin, and I. L. Medintz. *ACS Nano* 15, 16452–8 (2021).
- 2. Developmental self-assembly of a DNA tetrahedron**  
J. P. Sadowski, C. R. Calvert, D. Y. Zhang, N. A. Pierce, and P. Yin. *ACS Nano* 8, 3251–9 (2014).
- 3. Programming multiple protein patterns on a single DNA nanostructure**  
J. D. Cohen, J. P. Sadowski, and P. B. Dervan. *Journal of the American Chemical Society* 130, 402–3 (2008).
- 4. Addressing single molecules on DNA nanostructures**  
J. D. Cohen, J. P. Sadowski, and P. B. Dervan. *Angewandte Chemie Int. Ed.* 46, 7956–9 (2007).

#### ***Other Publications***

**How the Internet changed chemistry: spreading science globally with Wikipedia**

J. P. Sadowski. *Chemical & Engineering News*, 17 August 2015.

**Multisubjective: nucleic acid design through fast removal of undesired secondary structure**

J. P. Sadowski. (2015).

#### ***Conferences and Seminars***

##### *Technical*

Foundations of Nanoscience 18, Virtual (2021) [Invited talk]

MAD Nano 2, Gaithersburg, MD (2017) [Poster]

American Chemical Society 252nd National Meeting, Philadelphia, PA (2016) [Poster]

George Mason University Department of Chemistry and Biochemistry, Fairfax, VA (2016) [Seminar]

DNA Computing and Molecular Programming 21, Boston, MA (2015) [Poster]

Technische Universität Dresden Center for Advancing Electronics, Dresden, Germany (2015) [Seminar]

DNA Computing and Molecular Programming 20, Kyoto, Japan (2014) [Poster]

MAD Nano 1, Baltimore, MD (2014) [Invited talk]

DNA Computing and Molecular Programming 19, Tempe, AZ (2013) [Contributed talk]  
DNA Computing and Molecular Programming 18, Aarhus, Denmark (2012) [Poster]  
Harvard University Department of Systems Biology, Boston, MA (2011) [Seminar]

#### *Communications and policy*

WikiConference North America 8, Virtual (2021) [Contributed talk]  
WikiConference North America 7, Virtual (2020) [Invited workshop]  
Sustainable Nanotechnology Organization Conference, Virtual (2020) [Contributed talk]  
WikiConference North America 6, Cambridge, MA (2019) [Contributed talk]  
WikiConference North America 5, Columbus, OH (2018) [Invited workshop]  
Wikimania 15, Cape Town, South Africa (2018) [Invited talk]  
NIVA Education Workshop on Digital Media, Copenhagen, Denmark (2018) [Invited workshop]  
International Congress on Occupational Health, Dublin, Ireland (2018) [Contributed workshop]  
Wikimania 14, Montréal, Québec, Canada (2017) [Invited talk]  
WikiConference North America 3, San Diego, CA (2016) [Contributed panel discussion]  
Wikimedia Affiliates Conference, Berlin, Germany (2015) [Invited talk]  
Harvard Kennedy School (twice, 2013) [Seminar]

#### **Honors and awards**

NIOSH Bullard–Sherwood Award for Research-to-Practice, Knowledge Category (2019)  
Fed Tech Fellow (2019)  
National Science Foundation I-Corps: business accelerator funding for customer discovery activities (2018)  
American Society for Engineering Education Postdoctoral Fellowship (2014)  
National Academy of Sciences Christine Mirzayan Science & Technology Policy Graduate Fellowship (2014)  
National Science Foundation Graduate Research Fellowship (2008)  
Buttonwood Foundation J. Marshall & Jane H. Booker Graduate Scholarship (2007)  
Caltech Axline Merit Award: 4-year full scholarship to Caltech (2003–2007)  
Caltech Richard P. Schuster Memorial Prize for academic merit in chemistry (2007)  
Caltech University College London Scholars Program: one term of study abroad (2006)  
Caltech Marcella and Joel Bonsall Prize for Technical Writing (twice, 2003 and 2004)  
Junior Science and Humanities Symposium Second Place National Winner in Physical Sciences (2003)  
Intel Int'l Science & Engineering Fair 1st Prize American Chemical Society Award (2003)  
Intel Int'l Science & Engineering Fair 3rd Award for Chemistry (2003)  
Intel Science Talent Search Semifinalist (2003)  
Siemens–Westinghouse Competition Regional Finalist (2002)  
Eagle Scout with three palms (2001)  
Johns Hopkins CTY Talent Search 1st place national in mathematics (1999)

#### **Press**

Harnessing Wikipedia's superpowers for journalism. Monika Sengul-Jones. *DataJournalism*, 2 Dec 2020.  
Geophysical scientists take red pencils to Wikipedia. Allison Torres Burtka. *Associations Now*, 3 Oct 2016.  
Working with Wikipedia: collaboration is key for chemists contributing to the online encyclopedia.  
Matt Davenport. *Chemical & Engineering News*, 14 Sept 2015.  
Chemistry Ambassadors member spotlight: John Sadowski. American Chemical Society. Sept 2014.  
Caltech relaxes with Shakespeare's every word. Stephanie Chavez. *Los Angeles Times*, 30 May 2004.  
Sensitive support of gifted student. John Hildebrand. *Newsday*, 6 May 2003.  
Fourth grader attends high school. Noah Melnick. *Viking View* (North Shore High School, NY), April 1995.