

Curriculum Vitae

Hao Yan

Education

Ph.D. in Chemistry	New York University, New York, NY Advisor: Nadrian C. Seeman	August 2001
B.S. in Chemistry	Shandong University, Jinan, P.R.China	July 1993

Employment and Appointment

- 09/2013 to Present Director, Center for Molecular Design and Biomimetics
Biodesign Institute, Arizona State University, Tempe, AZ
- 01/2012 to Present Inaugural Milton D. Glick Distinguished Professor
Department of Chemistry and Biochemistry & Biodesign Institute,
Arizona State University, Tempe, AZ
- 08/2008 to 01/2012 Professor
Department of Chemistry and Biochemistry & Biodesign Institute,
Arizona State University, Tempe, AZ
- 08/2004 to 08/2008 Assistant Professor
Department of Chemistry and Biochemistry & Biodesign Institute,
Arizona State University, Tempe, AZ
- 09/2001 to 07/2004 Assistant Research Professor
Department of Computer Science, Duke University, Durham, NC

Awards and Honors

- Member of Editorial Board, Nano Research, 2014 to Present
- The Rozenberg Tulip Award in DNA Computing, 2013
- Elected President, International Society for Nanoscale Science, Computation and Engineering, 2013
- Arizona Technology Enterprise Achievement Award, 2013
- Finalist, Arizona State University Outstanding Doctoral Mentor Award, 2013
- Overseas Expert, Chinese Academy of Sciences, 2013 to Present
- Inaugural Milton D. Glick Distinguished Professor in Chemistry and Biochemistry, 2012
- Member of Editorial Advisory Board, Langmuir, 2011 to Present

- Member of Steering Committee, International Meeting on DNA Computing and Molecular Programming, 2012 to present
- Guest Professor, Shandong University, P.R.China, 2010 to Present
- Scientific Advisory Board Member, Laboratory of Physical Biology, Shanghai Institute of Applied Physics, Chinese Academy of Sciences, P.R.China, 2009 to Present
- Arizona State University Promotion and Tenure Faculty Exemplar, 2008
- Alfred P. Sloan Research Fellowship, 2008
- Air Force Office of Scientific Research Young Investigator Award, 2007
- Guest Professor, National Center for Nanoscience and Technology, Chinese Academy of Sciences, P.R.China, 2010 to Present
- National Science Foundation CAREER Award, 2006
- Arizona Technology Enterprise Innovator of Tomorrow Award, 2006
- New York University GSAS Dean's Dissertation Fellowship, 2006

Research Bibliography

Journal Publications

Google scholar profile: <http://scholar.google.com/citations?user=arJVgNsAAAAJ&hl=en>

h-index as of October 27, 2014: 56

A. At Arizona State University

- 142 K. Pan, D. N. Kim, F. Zhang, M. Adendorff, H. Yan, M. Bathe*, Lattice-free prediction of three-dimensional structure of programmed DNA assemblies. *Nature Communications*, in press (2014).
- 141 P. Dutta, S. Levenberg, A. Loskutov, D. Jun, R. Saer, J. Beatty, S. Lin, Y. Liu, N. Woodbury*, H. Yan*, A DNA-Directed Light-Harvesting/Reaction Center System, *J. Am. Chem. Soc.*, in press (2014).
- 140 A. Samanta, Y. Zhou, S. Zou, H. Yan, Y. Liu*, Fluorescence Quenching of Quantum Dots by Gold Nanoparticles: a Potential Long Range Spectroscopic Ruler, *Nano Letters*, 14, 5052–5057 (2014).
- 139 F. Zhang, J. Nangreave, Y. Liu, H. Yan*, Structural DNA Nanotechnology: State of the Art and Future Perspective, *J. Am. Chem. Soc.*, 136, 11198–11211 (2014).
- 138 D. Wang, S. Capehart, S. Pal, M. Liu, L. Zhang, J. Schuck, Y. Liu, H. Yan, M. Francis, J. De Yoreo*, Hierarchical Assembly of Plasmonic Nanostructures using Virus Capsid Scaffolds on DNA Origami Templates, *ACS Nano*, 8, 7896–7904 (2014).

- 137 J. Flory, C. Simmons, S. Lin, T. Jonhson, A. Andreoni, J. Zook, G. Chirlanda, Y. Liu, **H. Yan**, and P. Fromme, Low Temperature Assembly of Functional 3D DNA-PNA-Protein Complexes, *J. Am. Chem. Soc.*, 136, 8283-8295 (2014).
- 136 A. Johnson-Buck, S. Jiang, **H. Yan**, and N. G. Walter, DNA-Cholesterol Barges as Programmable Membrane-Exploring Agents, *ACS Nano*, 8, 5641-5649 (2014).
- 135 L. Liang, J. Li, Q. Li, Q. Huang, J. Shi, **H. Yan**, and C. Fan, Single-particle Tracking and Modulation of Cell Entry Pathways of a Tetrahedral DNA Nanostructure in Live Cells, *Angew Chem Int Ed.*, 53, 7745-7750 (2014).
- 134 J. Fu, Y. R. Yang, A. Johnson-Buck, Y. Liu, N. G. Walter, N. W. Woodbury, and **H. Yan**, Multi-enzyme Complexes on DNA Scaffolds Capable of Substrate Channeling with an Artificial Swinging Arm, *Nature Nanotechnology*, 9, 531-536 (2014).
- 133 S. Jiang, **H. Yan**, and Y. Liu, Kinetics of DNA Tile Dimerization, *ACS Nano.*, 8, 5826-5832 (2014).
- 132 W. Li, Y. Yang, S. Jiang, **H. Yan**, and Y. Liu, Controlled Nucleation and Growth of DNA Tile Arrays within Prescribed DNA Origami Frames and Their Dynamics, *J. Am. Chem. Soc.*, 136, 3724-3727 (2014).
- 131 P. Dutta, S. Lin, A. Loskutov, S. Levenberg, D. Jun, R. Saer, J. Beatty, Y. Liu, **H. Yan**, and N. Woodbury, Regengineering the Optical Absorption Cross-section of Photosynthetic Reaction Centers, *J. Am. Chem. Soc.*, 136, 4599-4604 (2014).
- 130 D. Han, S. Jiang, A. Samanta, Y. Liu, and **H. Yan**, Unidirectional Scaffold-Strand Arrangement in DNA Origami, *Angew Chem Int Ed.*, 52, 9031-9034 (2013).
- 129 Q. Mei, R. H. Johnson, X. Wei, F. Su, Y. Liu, L. Kelbauskas, S. Lindsay, D. R. Meldrum, and **H. Yan**, On-chip Isotachopheresis Separation of Functional DNA Origami Capture Nanoarrays from Cell Lysate, *Nano Research*, 6, 712-719 (2013).
- 128 M. Liu, J. Fu, C. Hejesen, Y. Yang, N. W. Woodbury, K. Gothelf, Y. Liu, and **H. Yan**, A DNA Tweezer-Actuated Enzyme Nanoreactor, *Nature Comm.*, 4:2127 (2013).
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- 96 D. Han*, S. Pal, J. Nangreave, Z. Deng, Y. Liu, and **H. Yan**, DNA Origami with Complex Curvatures in Three-dimensional Space, *Science*, 332, 342-346 2011. (Featured as cover story of the April 15 issue of Science)
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Book Chapters

- 10 A. Edwards and **H. Yan**, "DNA Origami". In: *Nucleic Acid Nanotechnology*, ed. by K. Gothelf, Springer, 2013.
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- 2 N.C. Seeman, C. Mao, F. Liu, R. Sha, X. Yang, L. Wenzler, X. Li, Z. Shen, **H. Yan**, P. Sa-Ardyen, X. Zhang, W. Shen, J. Birac, P. Lukeman, Y. Pinto, J. Qi, B. Liu, H. Qiu, S.M. Du, H. Wang, W. Sun, Y. Wang, T.-J. Fu, Y. Zhang, J.E. Mueller and J. Chen. “Nicks, Nodes, and New Motifs for DNA Nanotechnology”. In: Frontiers of Nano-Optoelectronic Systems, ed. by L. Pavesi & E. Buzanova, Kluwer, Dordrecht, 177-198 (2000).
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Patents and Patent Applications

- 1 “A Polynucleic Acid Nanomechanical Device Controlled By Hybridization Topology”
U.S. Patent issued #7,612,184, Issue date: November 03, 2009.
Inventors: N. C. Seeman, H. Yan, X. Zhang and Z. Shen
- 2 “DNA Nanostructures that Promote Cell-Cell Interaction and Use Thereof”
U.S. Patent issued: #8,440,811, Issue date: May 14, 2013
Inventors: Y. Chang, H. Yan
- 3 “Multifunctional Aptamer-nucleic Acid Nanostructures for Tumor-targeted Killing”
U.S. Patent issued: #8,552,167, Issue date: October 8, 2013
Inventors: Y. Chang, H. Yan
- 4 “Modified Nucleic Acid Nanoarrays and Uses Therefor
US Patent issued: #8,685,894B2, Issue date: April 1, 2014
Inventors: J. Chaput, S. Lindsay, H. Yan, P. Zhang
- 5 Self-assembling, Tiling, Nucleic Acid Nanoarrays for use in Nanofabrication and Nanostructures PCT International Application, WO2006124089
Inventors: S. Lindsay, H. Yan, J. Chaput, Y. Liu, P. Zhang
- 6 Design of Synthetic Antibodies (Synbodies) Comprising Two Affinity Elements and a Linker. PCT Int. Appl. (2008) WO 2008048970

Inventors: S. Jonhston, N. Woodbury, J. Chaput, Chris, Diehnelt, H. Yan

- 7 TLR Ligand-Nucleic Acid Nanostructure as a Novel Immune Modulatory Agent and Method of Using the Same PCT/US09/065508
Inventors: Yung Chang and Hao Yan

Invited Presentations

- 106 “Designer DNA Nanoarchitectures for Multivalency”, 3rd International Symposium on Multivalency in Chemistry and Biochemistry, Berlin, Germany, Oct.22-24, 2014.
- 105 “Designer DNA Nanoarchitectures for Programmable Self-assembly”, ACS Central Regional Meeting, Session on DNA/RNA Nanostructures, Pittsburgh, Oct.1-4, 2014.
- 104 “Designer DNA Nanoarchitectures for Programmable Self-assembly”, Department of Chemistry, U. of Pittsburgh, Oct.2, 2014.
- 103 “DNA Origami and the Different Functionalization Techniques”, Plasmonics: Manipulating Light-Matter Interaction at the Nanoscale, Gordon Research Conference, Newry, ME, July 6-11, 2014.
- 102 “Designer DNA Nanoarchitectures for Programmable Self-assembly”, The Third International DNA Nanotechnology Conference, Suzhou, China, May 25-28, 2014. Co-Chair of Organizing Committee and Plenary speaker.
- 101 “Designer DNA Nanoarchitectures for Programmable Self-assembly”, International Workshop on DNA-Based Nanotechnology: Digital Chemistry, Dresden, Germany, May 5-9, 2014. Co-Organizer and Invited speaker.
- 100 “Designer DNA Nanoarchitectures for Programmable Self-assembly”, 40th Annual Naff Symposium on Chemistry and Molecular Biology, April 25, 2014. (Keynote speaker).
- 99 “Designer DNA Nanoarchitectures for Programmable Self-assembly”, Department of Chemistry, U. of Michigan, April 1, 2014.
- 98 “Designer DNA Nanoarchitectures for Programmable Self-assembly”, Department of Chemistry, U. of Chicago, March 31, 2014.
- 97 “New Innovations in Biotechnology: Molecular Design and Biomimicry”, Presidential Engagement Program, Building Solutions to Grand Challenges: Creating Societal Impact Through Use-Inspired Research, Arizona State University, March 13, 2014.
- 96 “Designer DNA Architectures for Programmable Self-assembly”, Bio-Inspired Computing: Theories and Applications 2013 (BIC-TA 2013), Huangshan, China, July 12-14, 2013. (Keynote speaker).
- 95 “Designer DNA Architectures for Programmable Self-assembly”, 10th Annual Conference, Foundation of Nanoscience, Self-assembled Achitectures and Devices, Snowbird, Utah, April 15-18, 2013. (Keynote speaker)
- 94 “Designer DNA Architectures for Programmable Self-assembly”, Wyss Institute of Bioinspired Engineering, Harvard University, May 13, 2013.
- 93 “Designer DNA Architectures for Programmable Self-assembly”, Department of Bioengineering, MIT, May 9, 2013.

- 92 “Designer DNA Architectures for Programmable Self-assembly”, Department of Chemistry, Penn State Univ, April 3, 2013.
- 91 “Designer DNA Architectures”, DNATEC workshop, Aarhus, Denmark, August 13, 2012.
- 90 “Designer DNA Nanostructures for Nanobiotechnology”, Biochemistry and Molecular Pharmacology, University of Massachusetts Medical School, Worcester, MA, May 9, 2012.
- 89 “Designer DNA Nanostructures”, Department of Chemistry, University of Nebraska - Lincoln, NE, April 6, 2012.
- 88 “Designer DNA Nanostructures”, Seminar Series in Chemical Biology, Yale University – New Heaven CT, April 4, 2012.
- 87 “Designer DNA Architectures for Nanotechnology”, the 243rd ACS National Meeting, San Diego, CA, March 25, 2012.
- 86 “Designer DNA Architectures”, DNA Nanotechnology Conference: From Structure to Function, Shanghai, China, March 16-19, 2012.
- 85 “Designer DNA Nanostructures”, the 14th IUPAC conference on Polymers and Organic Chemistry, Doha, Qatar, Jan. 6-9, 2012.
- 84 “Designer DNA Nanostructures”, the 17th International Conference on DNA Computing and Molecular Programming, Pasadena, CA, Sept. 19-23, 2011. (Plenary Talk).
- 83 “Designer DNA Nanostructures”, Symposium In Honor of Ned Seeman, The 8th meeting for Foundations of Nanoscience: Self-assembled Architectures and Devices, Snowbird, Utah, April 11-15, 2011.
- 82 “Designer DNA Nanostructures”, iNANO, University of Aarhus, Aarhus, Denmark, Feb. 7. 2011.
- 81 “Designer DNA Nanostructures for Nanobiotechnology”, The 8th iCeMS International Symposium on Meso-Control of Functional Architecture, Kyoto, Japan. November 9-11, 2010.
- 80 “Designer DNA Nanostructures for Nanobiotechnology”, Graduate summer school in molecular self-assembly hosted by the Interdisciplinary Nanoscience Center at Aarhus University, Denmark, Aug. 7-12, 2010.
- 79 “Designer DNA Nanostructures for Nanobiotechnology”, Gordon Research Conference on Nobel Metal Nanoparticles, Mount Holyoke College, MA, June 20-25, 2010.
- 78 “Designer DNA Nanostructures for Nanobiotechnology”, School of Chemistry and Molecular Engineering, East China University of Science & Technology, Shanghai, China, June 13, 2010.
- 77 “Designer DNA Nanostructures for Nanobiotechnology”, Fifth Sino-US Nano Forum, Suzhou Institute of Nanotechnology and Nanobioncs (SINANO), Chinese Academy of Sciences, June 5-7, 2010.
- 76 “Designer DNA Nanostructures for Nanobiotechnology”, Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, China, June 1, 2010.
- 75 “Designer DNA Nanostructures for Nanobiotechnology”, School of Chemistry, Shandong

- University, Jinan, China, May 21, 2010.
- 74 “Designer DNA Nanostructures for Nanobiotechnology”, Workshop on Bio-directed Assembly, Keystone, CO, May 17-18, 2010.
 - 73 “Designer DNA Nanostructures for Directed Self-assembly”, Center for Nanofabrication, U. of Washington, Seattle, WA, May 4, 2010.
 - 72 “Designer DNA Nanostructures for Nanobiotechnology”, Department of Biomedical Engineering, U. of Washington, Seattle, WA, May 3, 2010.
 - 71 “Designer DNA Nanostructures for Nanobiotechnology”, Foundations of Nanoscience: Self-assembled Architectures and Devices, Snowbird, Utah, April 27-29, 2010. (Keynote speaker).
 - 70 “Designer DNA Nanostructures for Nanobiotechnology”, Symposium OO: Hierarchical Self Assembly of Functional Materials from Nanoscopic- to Mesoscopic-Length Scales: 2010 Material Research Society Spring Meeting, San Francisco, CA, April, 5-9, 2010.
 - 69 “Designer DNA Nanostructures for Nanobiotechnology”, Workshop on Soft Nanomaterial Synthesis, Molecular Foundry, Lawrence Berkeley National Lab, CA, March 19-20, 2010.
 - 68 “Designer DNA Nanostructures for Nanobiotechnology”, Symposium on “Probing the BioNano Self-assembly World”, Pittcon 2010, Orlando, FL, Feb. 28-March 5, 2010.
 - 67 “Designer DNA Nanostructures for Nanobiotechnology”, Session on “DNA Nanomachines in Vitro and Inside Living Cells”, 54th Annual Biophysical Society Meeting, San Francisco, CA, Feb. 20-24, 2010.
 - 66 “Designer DNA Nanostructures for Nanobiotechnology”, Biophysics Seminar, Dept. of Physics and Astronomy, Rice University, Houston, TX, Nov. 6, 2009.
 - 65 “Designer DNA Nanostructures for Nanobiotechnology”, nanoUtah2009: 5th Annual Utah Statewide Nanotechnology Conference, Salt Lake City, Utah, Oct.16, 2009.
 - 64 “Designer DNA Nanostructures for Nanobiotechnology”, Dept. of Chemical and Nuclear Engineering, U. of New Mexico, Albuquerque, NM, Sept. 29, 2009.
 - 63 “Designer DNA Nanostructures for Nanobiotechnology”, DNA Nanotechnology workshop, National Center for Nanoscience and Technology, Beijing, July 16, 2009.
 - 62 “Designer DNA Nanostructures for Nanobiotechnology”, Dept. of Chemistry, Univ. of Science and Technology of China, Hefei, July 10, 2009.
 - 61 “Designer DNA Nanostructures for Nanobiotechnology”, Institute of Applied Physics, CAS, Shanghai, July 8, 2009.
 - 60 “Designer DNA Nanostructures for Nanobiotechnology”, Materials Science and Engineering Department, Iowa State University, Ames, IA, April. 9, 2009.
 - 59 “Designer DNA Nanostructures for Nanobiotechnology”, Mini-symposium of Center for DNA Nanotechnology, Duke University, Durham, NC, March. 20, 2009.
 - 58 “Designer DNA Nanostructures for Nanobiotechnology”, Department of Chemistry, Florida State University, Tallahassee, FL, Feb. 27, 2009.

- 57 “Designer DNA Nanostructures for Nanobiotechnology”, Joint MIT and Harvard Inorganic Chemistry Seminar Series, Department of Chemistry, MIT, Cambridge, MA, Jan. 21, 2009.
- 56 “Designer DNA Nanostructures for Nanobiotechnology”, Departments of Material Science and Mechanical Engineering , UC Santa Babara, Santa Barbara, CA Oct. 31, 2008.
- 55 “Designer DNA Nanostructures for Nanobiotechnology”. the Joint Symposium of 18th International Roundtable on Nucleosides, Nucleotides and Nucleic Acids (IRTXVIII) and 35th International Symposium on Nucleic Acids Chemistry (SNAC), Kyoto, Japan, September 8th – 12th, 2008.
- 54 “Designer DNA Nanostructures for Nanobiotechnology”. SPIE Optics and Photonics Meeting (Biosensing Symposium), San Diego, CA, August 10-14, 2008.
- 53 “Structural DNA Nanotechnology: Information Guided Self-assembly”, Gordon Research Conference, Session on Bioorganic Chemistry (Organizer: W. A. Van Der Donk & P. L. Richardson), Andover, NH, June. 15-20, 2008.
- 52 “Designer DNA Nanostructures for Nanobiotechnology”. Conference of International Materials and Technologies (CIMTEC08: Symposium E), Sicilly, Italy, June 8-13, 2008.
- 51 “Designer DNA Nanostructures for Nanobiotechnology”. International Symposium for DNA based nanodevices, Jena, German, May 29-30, 2008.
- 50 “Designer DNA Nanostructures for Nanobiotechnology”. Foundations of Nanoscience: Self-assembled Architectures and Devices (FNANO08), Snowbird, Utah, April 22-25, 2008.
- 49 “DNA based Nanscale Scaffolds, Assembly and Molecular Robotics”. Office of Naval Research Workshop on DNA based Nanofabrication, Washington DC, April 11, 2008.
- 48 “Designer DNA Nanostructures for Nanobiotechnology”. 3rd Annual Arizona Nanotechnology Cluster Symposium, Scottsdale, AZ, April 10, 2008.
- 47 “Designer DNA Nanostructures for Nanobiotechnology”. Department of Chemistry, Texas A &M University, College Station, TX, April 4, 2008.
- 46 “Structural DNA Nanotechnology: Information Guided Self-assembly”, Department of Chemistry and Biochemistry, Brigham Young University, Provo, Utah, March. 27, 2008.
- 45 “Designer DNA Nanostructures for Nanobiotechnology”, 2008 William H. Nichols Symposium, New York Section of the American Chemical Society, White Plains, NY, March. 14, 2008.
- 44 “Structural DNA Nanotechnology: Information Guided Self-assembly”, Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA, March. 12, 2008.
- 43 “Structural DNA Nanotechnology: Information Guided Self-assembly”, Department of Chemistry, U. of Central Florida, Orlando, FL, Oct. 12, 2007.
- 42 “DNA Based Self-assembly of Nanostructures”, Symposium MM: Biomolecular and Biologically-Inspired Interfaces and Assemblies, Fall 2007 Materials Research Society National Meeting, Boston, MA, Nov 27-Dec. 1, 2007.
- 41 “DNA Based Self-assembly of Nanostructures”, Symposium on Advances in Bio-based

- Nanostructures and Nanomaterials, 234th ACS National Meeting, Boston, MA, Aug. 19-23, 2007.
- 40 “DNA Based Self-assembly of Nanostructures”, Mini-symposium on DNA based Nanotechnology University of Aarhus, Aarhus, Denmark, Aug. 17, 2007.
 - 39 “DNA Based Self-assembly of Nanostructures”, The Second Advanced Materials Workshop, Dalian, China, June 23-24, 2007.
 - 38 “DNA Based Self-assembly of Nanostructures”, Albany 2007: The 15th Conversation, Albany, New York, June 21, 2007.
 - 37 “DNA Based Self-assembly of Nanostructures”, NSF Center for Hierarchical Manufacturing, U. of Massachusetts, Amherst, MA, May 17, 2007.
 - 36 “DNA Based Self-assembly of Nanostructures”, Nanoscience and Nanotechnology Session 2006 SACNAS, Tampa, FL, Oct. 27, 2006.
 - 35 “DNA Based Self-assembly of Nanostructures”, Bionanotechnology Symposium organized by Canadian institute for advanced research, Toronto, Canada, Oct. 14-15, 2006.
 - 34 “DNA Based Self-assembly of Nanostructures”, Department of Chemistry, Hunter College, CUNY, New York, NY, Sept. 29, 2006.
 - 33 “DNA Based Self-assembly of Nanostructures”, National Center for Nanoscience and Technology, Beijing, China, June 19, 2006.
 - 32 “DNA Based Self-assembly of Nanostructures”, Department of Chemistry, Tsinghua University, Beijing, China, June 19, 2006.
 - 31 “DNA Based Self-assembly of Nanostructures s”, Interdisciplinary Nanoscience Center (iNANO), University of Aarhus, Aarhus, Denmark, May 24, 2006.
 - 30 “DNA Based Self-assembly of Nanostructures”, Department of Physics, Leiden University, Leiden, Netherland, May 22, 2006.
 - 29 “DNA Based Self-assembly of Nanostructures”, International Symposium on DNA-Based Nanoscale Integration, Jena, Germany, May 18-20, 2006.
 - 28 “DNA Based Self-assembly of Nanostructures”, Symposium on Frontier of Nanoscience, Auburn University, Auburn, AL, May. 2, 2006.
 - 27 “DNA Based Self-assembly of Nanostructures”, NSF workshop: The Synthesis of Complex Chemical Systems, Oxfordshire, UK, March 19-21, 2006.
 - 26 “DNA Based Self-assembly of Nanostructures”, Department of Physics, University of Oxford, Oxford, UK, Mar. 17, 2006.
 - 25 “DNA Based Self-assembly of Nanostructures”, VIII Annual Linz Winter Workshop on Single Molecule Research, Linz, Austria, Feb. 3-7, 2006.
 - 24 “DNA Based Self-assembly of Hierarchical Nanostructures”, Arizona Nanocluster Symposium, Organized by Quanttera Co., Tempe, AZ, Jan. 26, 2006.
 - 23 “DNA Based Self-assembly of Hierarchical Nanostructures”, Mini-Symposium on DNA Self Assembly and Robotics, Columbia University, New York, NY, Dec. 16, 2005.

- 22 “DNA Based Self-assembly of Hierarchical Nanostructures”, NSF Workshop: Emerging Opportunities of Nanoscience to Energy Conversion and Storage, Arlington, VA, Nov 21-22, 2005.
- 21 “DNA Based Nanobiotechnology”, Department of Biomedical Engineering, Cornell University, Ithaca, NY, Oct. 6, 2005.
- 20 “DNA Based Nanobiotechnology”, Department of Chemical Engineering, Hong Kong University of Science and Technology, Hong Kong, Aug. 2, 2005.
- 19 “DNA Based Nanobiotechnology”, 2005 Scanning Probe Microscopy, Sensors and Nanostructures Meeting, Cancun, Mexico, June 6, 2005.
- 18 “DNA Based Nanobiotechnology”, Session on Developing Nano-Bio Interfaces, 2005 MRS Spring Meeting, San Francisco, CA. March 28-April 1, 2005.
- 17 “DNA Based Nanobiotechnology”, 2005 Arizona Imaging and Microanalysis Society Annual Meeting, Tempe, AZ, March 22, 2005.
- 16 “DNA Based nanotechnology: pattern and motion”, Engineering a DNA World, Workshop sponsored by California Institute of Technology, Center for Biological Circuit Design Rock Auditorium, Broad Center for Biological Sciences, Pasadena, CA, Jan. 7, 2005.
- 15 “DNA Based Nanobiotechnology”, Structure of Nanocrystals Workshop Sponsored by Michigan State University, Tempe, AZ, Dec. 5-8, 2004.
- 14 “DNA Based Nanotechnology: Pattern and Motion”. ACS Rocky mountain analytical section, Denver, CO, Aug. 2, 2004.
- 13 “DNA Self-assembly, Nanoactuators and Autonomous Unidirectional DNA Motor”. Max Bergmann Zentrum fur Biomaterialien, Technische Universitat Dresden, Germany, May 18, 2004.
- 12 “New Structures for DNA based Nanotechnology”. DNA-Based Molecular Electronics, International Symposium, Jena, Germany, May 15, 2004.
- 11 “DNA Nanoactuator in Self-assembly”. Foundations of Nanoscience: Self-assembled Architectures and Devices, Snowbird, Utah, April 21-23, 2004.
- 10 “DNA Self-assembly, Nanoactuators and Autonomous Unidirectional DNA Motor”. 320th WE-Heraeus-Seminar "Nano-Physics of DNA" Physikzentrum Bad Honnef, Germany, Mar. 23, 2004.
- 9 “DNA Nanoactuators in Self-assembly”. DARPA IPTO Workshop for Molecular Architectures from Self-Assembled Nanostructures, Adelphi, MD, Feb. 3-5, 2004.
- 8 “DNA self-assembly for nanoconstruction and molecular robotics”. Dept. of Chemistry and Chemical Biology, Harvard University, Cambridge, MA, Jan. 18, 2003.
- 7 “Overview of New Structures for DNA-based Nanofabrication and Computation”. 6th International Conference on Computational Intelligence and Natural Computing, Cary, NC, Sept. 26-30, 2003.
- 6 “Self-assembly of DNA for Computing and Molecular Robotics”. Department of Chemistry, Duke University, Durham, NC, Sept. 12, 2003.

- 5 “Self-assembly of DNA for Nanofabrication, Computing and Molecular Robotics”. Department of Quantum Molecular Devices. Osaka University, Osaka, Japan, Aug. 11, 2003.
- 4 “Self-assembly of DNA for Nanofabrication and Molecular Robotics”. Graduate School of Arts and Sciences, College of Arts and Science, University of Tokyo, Tokyo, Japan, Aug. 9, 2003.
- 3 “Self-assembly of DNA for Nanofabrication, Computing and Molecular Robotics”. Graduate School of Engineering, Hokkaido University, Sapporo, Japan, Aug. 5, 2003.
- 2 “Tutorial: Self-assembly of Nanostructures”. 9th International Meeting on DNA Based Computers, Madison, WI, June 1, 2003.
- 1 “Molecular Robotics for DNA Nanostructures”. DARPA IPTO/NSF Bio-Computation/QIS Joint PI Meeting, Fort Lauderdale, FL, May 16, 2003.

Past Research Support

<p><i>National Science Foundation</i> “Molecular Robotics for DNA Nanostructures” Award amount: \$349,950 Role: PI</p>	8/02-08/06
<p><i>National Science Foundation</i> “NANO: Combinatorial Self-assembly of Nanocircuit on Addressable DNA Nanoscaffolds” Award amount: \$300,000 Role: PI</p>	8/04-07/07
<p><i>AZTE Innovation Catalyst Fund</i> “A Protein Detection Technology based on Aptamer Binding” Award amount: \$40,000 Role: PI</p>	8/05-07/06
<p><i>National Science Foundation</i> “Career: DNA Directed-Self-assembly of Multicomponent Nanoarchitectures” Award amount: \$400,000 Role: PI</p>	8/06-07/11
<p><i>National Institute of Health</i> “R21: Water-soluble Arrays for Personalized Medicine” Award amount: \$560,255 Role: co-PI; PI: S. Lindsay, co-PI: H. Yan, P. Zhang</p>	9/06-08/09
<p><i>National Science Foundation</i> “NIRT: Self-assembly at Photonic and Electronic Scale” Award amount: \$1,100,000 Role: co-PI; PI: S. Lindsay, co-PI: H. Yan, D. Gust, R. Diaz</p>	9/06-08/10

<i>Office of Naval Research</i>	12/06-11/09
“Nanodisplay: A Self-assembly Approach to Inorganic Nanoarrays”	
Award amount: \$450,000	
Role: PI; co-PI: J. Chaput	
<i>Air Force Office of Scientific Research</i>	1/07-11/09
AFOSR-YIP “Self-assembled Combinatorial Encoding Nanoarrays for Multiplexed Biosensing”	
Award amount: \$355,533	
Role: PI	
<i>National Science Foundation</i>	08/07-07/10
“Material World Network: Self-assembled DNA Nanotubes: Biomimetic Design, Controlled Surface Alignment and Templated Nanowire Formation”	
Award amount: \$276,000	
Role: PI	
<i>National Science Foundation</i>	09/07-08/10
“Emerging Model Technology: Self-assembled Inductors: A New Paradigm for Nanoelectronic Designs”	
Award amount: \$650,001	
Role: co-PI; PI: Hongbin Yu, co-PI: H. Yan, Y. Cao, B. Bakkaloglu	
<i>Alfred P. Sloan Foundation</i>	04/08-03/10
Research Fellowship	
Award amount: \$50,000	
Role: PI	
<i>National Institute of Health</i>	07/08-07/12
“1R01 DA026296-01: Feasibility Demonstration of an Artificial Electrocyte for Neuronal Observation and Stimulation”	
Award amount: \$1,200,000	
Role: co-PI; PI: R. Diaz, co-PI: T. Moore	
<i>National Science Foundation</i>	07/08-07/12
“EMT-MISC: Behavior Based Molecular Robotics”	
Award amount: \$2,200,000	
Role: co-PI; PI: M. Stojanovic and 5 other co-PIs	
<i>Army Research Office</i>	08/08-07/11
“Self-assembling DNA architectures for Bio-inspired Engineering of Discrete and Multifunctional Nanostructures”	
Award amount: \$300,000	
Role: PI; co-PI: Yan Liu	
<i>Office of Naval Research</i>	12/08-11/10
“Guided DNA Fabrication of Nanometer Scale Electron Devices and Sensors”	
Award amount: \$960,000	

Role: co-PI; PI: N. C. Seeman, co-PIs: S. Chou, C. Mao

DOD-CDMRP

“Multi-Specific Aptamer-nanoscaffolds to Induce Aptamer-dependent Cellular Cytotoxicity (ApDCC) against Breast Cancer Cells”

Award amount: \$106,848

Role: co-PI, PI: Yung Chang, co-PI: Yan Liu

Office of Naval Research

01/10-12/12

“Protein Arrays with Precisely Controlled Orientation and Position”

Award amount: \$470,000

Role: PI; co-PI: William Shih

Army Research Office

03/10-08/10

“Workshop on Bio-Directed Assembly, Keystone, Co, 18-19 May 2010”

Award amount: \$49,500

Role: PI

National Institute of Health

05/10-04/12

“1R21CA141021-01A2: Tunable DNA-nanostructure to Induce NK-mediated Killing of Tumor Cells”

Award amount: \$352,735

Role: co-PI; PIs: Y. Chang, co-PI: Y. Liu, H. Yan

Army Research Office

07/10-06/11

“High School Student Training Opportunity in a Structural DNA Nanotechnology Laboratory”

Award amount: \$9,150

Role: PI

National Science Foundation

12/10-11/13

Enzymology of Multi-enzyme Systems on Self-assembled Surfaces

Award amount: \$401,000

Role: Co-PI; PI: Neal Woodbury

National Institute of Health

04/11-03/12

“R21 DA030045: Tunable Nicotine DNA-Nanovaccines”

Award amount: \$319,120

Role: co-PI; PI: Y. Chang, co-PI: H. Yan, S. Hecht

Office of Naval Research

06/11-06/12

“High Speed Atomic Force Microscope for Real Time Imaging of Biomolecular Assembly”

Award amount: \$ 309,123

Role: PI

Department of Energy

08/09-07/14

EFRC: Bio-inspired Solar Fuel
Award amount: \$14.2 million
Role: co-PI with 10 others

Office of Naval Research 08/09-08/14
“DNA-based Three-dimensional Nanofabrication”
Award amount: \$3,200,000
Role: PI; co-PI: 8 others

National Science Foundation 09/11-08/14
“DNA Origami Nanostructures with Complex Curvatures in 3D Space”
Award amount: \$400,000
Role: PI; co-PI: Y. Liu

Current Research Support

National Institute of Health 08/09-05/14
“1R01 GM088818-01: Water Soluble Nanoarrays for Single Cell Proteomics”
Award amount: \$1,500,000
Role: PI; co-PIs: S. Lindsay, Y. Liu, D. Meldrum

National Science Foundation 07/12-06/15
“INSPIRE: Mimicking the Functional Complexity of Biology with Man-Made Systems”
Award amount: \$1,000,000
Role: co-PI; PI: N. Woodbury, co-PI: H. Yan, S. Johnson, S. Lindsay

Army Research Office 05/11-05/15
“Molecular Engineering of Self-assembled Nanoreactors”
Award amount: \$470,000
Role: PI; co-PI: Y. Liu

Army Research Office 08/12-07/17
“MURI-Translating Biochemical Pathways to Non-cellular Environments”
Award amount: \$6,250,000
Role: PI; 5 other co-PIs

National Institute of Health 09/12-08/17
“1R01GM104960: NIH-Transformative Research Award: Theranostic Nano-objects:
Basic Principles and Initial Applications”
Award amount: \$5,400,000
Role: co-PI; PI: Milan Stojanovic

National Institute of Health 04/13-03/16

“1R01DA035554-01: Rational Design and Targeted Selection of DNA-scaffolded Nicotine Vaccines”

Award amount: \$3,350,000

Role: co-PI; PI: Yung Chang

National Science Foundation

01/14-12/17

“DMREF: Computational Design Principles for Functional DNA-Based Materials”

Award amount: \$1,706,468

Role: co-PI; PI: M. Bathe, co-PI: P. Yin

National Science Foundation

07/14-7/17

“Self-assembling Quasi-crystals from DNA Tiles”

Award amount: \$390,000

Role: PI; co-PI: Y. Liu

Teaching Experience

A. Courses Taught

Year	Semester	Course	Title	Credit hours	Enrollment
2014	Fall	CHM460	Biological Chemistry	3	14
2012	Fall	BCH461	Biochemistry	3	134
2011	Fall	BCH461	Biochemistry	3	108
2011	Spring	BCH494	Bionanotechnology	3	24
2010	Fall	Sabbatical			
2009	Spring	Teaching Release			
2009	Fall	BCH461	Biochemistry	3	85
2009	Spring	CHM598	Bionanotechnology	3	24
2008	Fall	CHM461	Biochemistry	3	140
2008	Spring	BCH598	Bionanotechnology	3	14
2007	Fall	CHM460	Biological Chemistry	3	20

2007	Spring	BCH598	Bionanotechnology	3	6
2006	Fall	CHM460	Biological Chemistry	3	15
2006	Spring	BCH561	Advanced Topics in Biochemistry	3	11
2006	Spring	BCH598	Nucleic Acid and Nanobiotechnology	3	23
2005	Fall	<i>Approved Release Before Tenure</i>			
2005	Spring	<i>Approved Release Before Tenure</i>			
2004	Fall	BCH501	Current Topics in Biochemistry	1	21
2004	Fall	CHM598	Nucleic Acid and Nanobiotechnology	3	24

B. Graduate Student Mentees

Student	Year Enrolled	Research Area
Kyle Lund	Fall 04	Self-assembled DNA Molecular Pegboards and Spiral Tubes
Rahul Chhabra	Fall 04	DNA Tweezer and Templated Nanoparticle Assembly
Sherri Harvey	Fall 04	<i>in-vivo</i> Replication of DNA Nanostructures
Yonggang Ke	Spring 05	Water-soluble Nanoarrays for Gene Expression Detection
Chenxiang Lin	Spring 05	Combinatorial Barcode Nanoarrays
Jaswinder Sharma	Spring 05	Quantum Dot Based Nanoassembly and Biosensing
Jeanette Nangreave	Fall 07	Thermodynamics and Kinetics of DNA Nanostructures
Zhe Li	Fall 07	Higher Order Assembly of DNA Nanostructures
Zhao Zhao	Fall 08	Complementary Geometry for Self-assembly
XiXi Wei	Fall 08	Interfacing DNA nanostructures with live cells
Minghui Liu	Fall 08	Multi-enzyme Cascade Engineering
Suchetan Pal	Fall 08	DNA templated Nanophotonics
Xiaowei Liu	Fall 08	DNA Nanostructure Vaccines
Wei Li	Fall 09	DNA Computing
Palash Dutta	Fall 09	Multifunctional and Multicomponent Nanostructures
Dongran Han	Fall 09	3D DNA Origami with Complex Curvatures
Anirban Samanta	Fall 09	Quantum Dot Nanobiotechnology

Fei Zhang	Fall 10	Complex DNA Nanostructures
Shuoxing Jiang	Fall 11	Kinetics of DNA Self-assembly
Yuhe Yang	Fall 11	DNA Directed Enzyme Cascades
Saswata Banerjee	Fall 12	Theranostic Nanorobots
Angela Edwards	Fall 12	Thermodynamics and Kinetics of DNA Nanostructures
Yu Zhou	Fall 13	Single cell Analysis
Fan Hong	Fall 14	Dynamic DNA nanotechnology

Other Student Thesis Committees (current total: 32): Lisha Lin, Margaret Barnhart, Devendra Chauhan, Vikas Garg, Netra Joshi, Rawiwan Laocharoensuk, Yun Xiang, Sandip Shinde, Balakumar Thangaraj, Yang Li, Christopher Bley, Justin York, Jessica Troxel, Jinglei Zhang, Shahid Oamar, Mingyi Xie, Di Wu, Xiaodong Qi, Qin Yan, Yinan Liu, Berea Williams, Jennifer Watkins, Qiang Fu, Wen Wen, Terannie Vazuez-Alvarez, Su Zhang, Kaushik Gurunathan, Smitha Pillai, Jinglin Fu, Brandon Forrest, Linda Stearns, Jeanine Cordova, Anindya Roy, Jesse Bergkamp, Benjamin Sherman, Katherine Wong, Robin Paul, Justin Flory, Hao Liu

C. Postdoctoral Researcher Mentees: Dr. Junping Zhang, Dr. Qiangbin Wang, Dr. Xiaojun Guan, Dr. Zhengtao Deng, Dr. Reji Varghese, Dr. Yang Yang, Dr. Jinglin Fu, Dr. Alessio Andreoni, Dr. Ryan Nangreave, Dr. Sarah Henry, Dr. Xiaodong Qi

D. Undergraduate Student Mentees: David Hirschak, Thuy Thong, Bruce Norish, Mike Pease, Henry Lu, Christina Calhoun, Enoch Chiang, Danielle Niren, Sam Gowland, Ashely Hunt

E. High School Student and Teacher Mentees: Robert Barish, Patrick Vedeou, Alex Foyer, Tom Bundy, Jimmy Wang, Sharon New (Barsha High School teacher).

F. Current Status of Lab Alumni:

Chengxiang Lin, Assistant Professor, Yale University

Qiangbin Wang, Professor, Suzhou Institute of Nanotech and Nano-bionics, CAS, China

Baoquan Ding, Professor, National Center of Nanoscience and Nanotechnology, CAS, China

Reji Varghese, Assistant Professor, Indian Institute of Science Education and Research

Kyle Lund, Liaison Officer and Biodefense Scientist at Centre de Transfusion Sanguine des Armées

Yonggang Ke, Assistant Professor, Joint Bioengineering Department, Emory and Georgia Tech.

Jaswinder Sharma, Staff Scientist, Oak Ridge National Lab

Rahul Chhabra, Senior Scientist, Nanoanalytics Inc.

Sherri Rinker, Research Scientist II at AIT Bioscience

Suchetan Pal, Postdoc, Brookhaven National Lab
Dongran Han, Postdoc, Harvard University
Zhengtao Deng, Professor, Nanjing University
Jinglin Fu, Assistant Professor, Rutgers University, Camden
Zhe Li, Postdoc, Yale University
Jeanette Nangreave, Teaching faculty, ASU
Ryan Nangreave, Teaching faculty, ASU
Andre Pinheiro, Consultant at ICON P&MA
Junping Zhang, Material Scientist, Carestream Health-Advanced Materials
Zhao Zhao, Postdoc, Harvard Medical School
Anirban Samanta, Postdoc, Naval Research Laboratory
Palash Dutta, Postdoc, Emory University

Other Service

University and Departmental Service

Chair: Faculty Search Committee for Molecular Design and Biomimicry (2013)
Member: Faculty Search Committee for Joint Physics/Biodesign Biophysics Appointment (2011&2012)
Member: Departmental Strategic Planning Committee (2012-present)
Member: Departmental Graduate Program Committee (2010 - 2012)
Chair: Departmental Seminar Committee (2008 - 2010)
Member: Biodesign Institute Personnel Committee (2009-present)
Member: Departmental Seminar Committee (2006-2008)
Member: Departmental Seminar Committee (2004-2005)
Member: Departmental Septannual Review Committee (2005)
Member: Faculty Search Committee for biophysical theory position (2005)

Outside of ASU

A. Conference Program Committees:

President, International Society for Nanoscale Science, Computation and Engineering (2013-present).

Co-organizer for the Third International DNA Nanotechnology Conference, Suzhou, China (2014).

Co-organizer for DNATEC14: Digital Chemistry, Dresden, Germany (2014).

Chair of Organizing Committee for the 19th International Meeting in DNA Computing and Molecular Programming (2013).

Member of Steering Committee for International Meeting in DNA Computing and Molecular

Programming (2013).

Co-organizer, Symposium “DNA Nanotechnology” MRS Spring Meeting (2012).

International Advisory Board Member of *Symposium H "Mining Smartness from Nature"* of CIMTEC (2012).

Chair, Symposium in Honor of Ned Seeman, Snowbird, Utah, April 11 (2011).

Member of Steering Committee, International Conference on Bio-Inspired Computing: Theory and Applications (*BIC-TA*) (2011).

Chair, Workshop on “Bio-directed Assembly”, Keystone, CO, May 18-19 (2010).

Chair, Session on “DNA Nanomachines *in vitro* and Inside Living Cells”, 54th Annual Biophysical Society Meeting, San Francisco, CA, Feb. 20-24 (2010).

Co-Organizer, DNA Nanotechnology Workshop, Beijing, China, July 15-18 (2009).

Co-Organizer, International Workshop on DNA-based Nanotechnology: Construction, Mechanics, and Electronics, Dresden, Germany, May 11-15 (2009).

International Advisory Board Member: 3rd International Conference on “Smart Materials, Structures and Systems”--Symposium E: “Mining Smartness from Nature”, Sicily, Italy (2008).

Treasurer, International Society for Nanoscale Science, Computation and Engineering (2008).

Program track co-Chair, Track on Self-assembled DNA nanostructures, Fifth Conference on Foundations OF Nanoscience: Self-assembled Architectures and Devices (FNANO08), Snowbird, Utah (2008).

Program Committee Member: the 16th International Meeting for DNA Computing, Hong Kong (2010).

Program Committee Member: the 15th International Meeting for DNA Computing, Little Rock, Arkansas (2009).

Program Committee co-Chair: the 13th International Meeting for DNA Computing, Memphis (2007).

Program Committee Member: the 12th International Meeting for DNA Computing, Seoul, Korea (2006).

Program Committee Member: the 11th International Meeting for DNA Computing, London, Ontario, Canada (2005).

Program Committee Member: the 10th International Meeting on DNA-based Computers, Milano, Italy (2004).

Program Committee Member: DNA-Based Semantic Information Processing, KES'04- 8th Int'l Conference on Knowledge-Based Intelligent Information & Engineering Systems, Wellington, New Zealand (2004).

Session Chair: The Seventh International Meeting on Scanning Probe Microscopy, Cancun, Mexico (2005).

B. Editorial:

Editorial Advisory Board Member, Langmuir (2012-present).

Guest Co-editor: Natural Computing: Special Issue: DNA Computing Conference (2007).

Springer: Guest editor: *Proc. Natl. Acad. Sci.*

C. Grant Review Panel:

Panelist and Ad Hoc Reviewers for National Science Foundation (2003-2013).

Panelist: National Institute of Health (2004).

Ad Hoc Reviewer: ACS petroleum fund (2005).

Ad Hoc Reviewer: Research Cooperation (2007).

Ad Hoc Reviewer: Department of Energy (2010).

Invited Member of Review Panel at the Molecular Foundry in Lawrence Berkeley Laboratory.

Invited Member of Review Panel at the Los Alamos National Laboratory.

D. Manuscript Review:

Review of manuscripts for: *Science*, *Nature*, *Nature Materials*, *Nature Nanotechnology*, *Nature Protocols*, *Nature Chemistry*, *Nature Communication*, *Nature Methods*, *Proc. Natl. Acad. Sci.*, *J. Am. Chem Soc.*, *Angew Chem. Int. Ed.*, *Nano Letter*, *Small*, *ACS Nano*, *Advanced Material*, *Advanced Functional Materials*, *Nanotechnology*, *Chemistry of Materials*, *Chem. Comm*, *Biomacromolecules*, *Langmuir*, *ChemBioChem*, *ChemPhysChem*, *Nanomedicine*, *Nucleic Acid Research*

E. Professional Affiliations:

Member of American Chemical Society, Material Research Society, American Association for the Advancement of Science, International Society for Nanoscale Science, Computation and Engineering.