

*Curriculum Vitae***Yan Liu**

Dept. of Chemistry and Biochemistry
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EDUCATION

B.S.	Shandong University	P. R. China	Advisor: Ganzuo Li	1989-1993
Ph.D.	Columbia University	New York, NY	Advisor: Kenneth B. Eisenthal	1995-2000
Dissertation: "Studies of Colloidal Particles by Second Harmonic Generation"				
Post-Doc.	Rockefeller University	New York, NY	Advisor: David Mauzerall	2000-2001
Post-Doc.	Duke University	Durham, NC	Advisor: John D. Simon	2001-2004

EMPLOYMENT

Associate Professor	04/2013-current
Assistant Professor	08/2007-04/2013
Department of Chemistry and Biochemistry and Biodesign Institute Arizona State University, Tempe, AZ.	
Assistant Research Professor	08/2004-08/2007
Biodesign Institute, Arizona State University, Tempe, AZ.	
Postdoctoral Associate	09/2001-08/2004
Department of Chemistry, Duke University, Durham, NC.	
Postdoctoral Associate	09/2000-08/2001
Rockefeller University, New York, NY.	
Graduate Fellow	08/1995-08/2000
Columbia University, New York, NY.	

AWARDS AND HONORS

Tulip Award, together with Hao Yan at DNA 19, International Conference on DNA computing and Molecular Programming, September, 2013.

Travel Award for Young Investigator, American Society for Photobiology, July 2002.

Graduate Faculty Fellowship, Columbia University, 1995-2000

Jack Miller Award, in recognition of excellence in teaching, Columbia University, 1998

Excellent Graduate Award, Shandong University, 1993.

Guang-Hua Award, Shandong University, 1992

TEACHING**A. Scheduled lecturing**

- Spring 2014 BCH463 Biophysical Chemistry, Credit 3, Enrollment 60
Tu, Th, 3:00-4:15 pm (Co-teach with Prof. Rebekka Wachter)
- Fall 2013 BCH361 Principles of Biochemistry, Credit 3, Enrollment 150+90 (two sessions)
M. W. 4:30-5:45 pm, Tu, Th, 3:00-4:15 pm (co-teach with Dr. Scott Lefler)
- Spring 2013 BCH361 Principles of Biochemistry, Credit 3
Enrollment 320, M. W. 4:30-5:45 pm. (co-teach with Prof. Xu Wang)
CHM460 Biological Chemistry (for non-Biochemistry Chemistry majors) Credit 3
Enrollment 9, M. W. 3:00-4:15 pm.
- Fall 2012 BCH463 Biophysical Chemistry, Credit 3
Enrollment 81, M. W. F, 1:30-2:20 pm. (Co-teach with Prof. Rebekka Wachter)
- Spring, 2012 BCH463 Biophysical Chemistry, Credit 3
Enrollment 141, M. W. F, 3:05-3:55 pm. (co-teach with Prof. James Allen)
- Fall, 2011 Exempt from Teaching
- Spring, 2011 BCH463 Biophysical Chemistry, Credit 3
Enrollment 99, M. W. F, 3:05-3:55 pm. (co-teach with Prof. Tom Moore)
- Fall, 2010 BCH463 Biophysical Chemistry, Credit 3
Enrollment 81, M. W. F, 3:05-3:55 pm. (co-teach with Prof. Tom Moore)
- CHM 460 Biological Chemistry (for non-Biochemistry majors). Credit 3.
Enrollment 21, Tu, Th, 3:00-4:15 pm.
- Spring, 2010 BCH463 Biophysical Chemistry, Credit 3
Enrollment 72, M. W. F, 3:05-3:55 pm. (co-teach with Prof. James Allen)
- Fall, 2009 BCH463 Biophysical Chemistry, Credit 3
Enrollment 64, M. W. F, 3:05-3:55 pm. (co-teach with Prof. James Allen)
- CHM 460 Biological Chemistry (for non-Biochemistry majors). Credit 3.
Enrollment 34, Tu, Th, 3:00-4:15 pm.
- Spring, 2009 BCH463 Biophysical Chemistry, Credit 3
Enrollment 60, M. W. F, 3:05-3:55 pm. (co-teach with Prof. Tom Moore)
- Fall, 2008 CHM 460, Biological Chemistry (for non-Biochemistry majors). Credit 3.
Enrollment 24, Tu, Th, 3:40-4:55 pm.
- BCH 501 Current topics in Biochemistry, Graduate seminar. Credit 1
Fall, 2008, Enrollment: 18. Fri, 1:40-3:30 pm.
- Spring, 2008 CHM 460, Biological Chemistry (for non-Biochemistry majors). Credit 3
Enrollment: 25. Tu, Th, 3:40-4:55 pm.

Fall, 2007 Exempt from teaching.

B. Advisor/Co-advisor for Graduate Students

Graduated PhD Students

Sherri Rinker	Fall 2004-Fall 2008 (now is post-doc in Univ. of Indiana)
Kyle Lund	Fall 2004-Fall 2008 (now works at Army Research Lab)
Rahul Chhabra	Fall 2004-Spring 2009 (now works at NanoSpeed Diagnostics, Canada)
Chenxiang Lin	Spring 2005-Spring 2009 (post-doc in Harvard University, Shih group, now assistant professor in Yale University)
Jaswinder Sharma	Spring 2005-Spring 2009 (post-doc in Los Alamos National Lab, now principle investigator in Oak Ridge National Lab)
Yonggang Ke	Spring 2005-Spring 2009 (now is post-doc in Harvard Univ. Shih group)
Jeanette Nangreave	Summer 2007-Fall 2011 (now is research scientist in Biodesign, ASU)
Zhe Li	Fall 2007-Spring 2012 (now is post-doc in Yale University, Issacs group)
Xiaowei Liu	Fall 2008-Fall 2012 (now is post-doc in ASU, Chang group)
Suchetan Pal	Fall 2008-Fall 2012 (now is joint post-doc in Brookhaven National Lab and Columbia University, New York)
Dongran Han	Fall 2009-Fall 2012 (now is post-doc in Harvard Univ. Peng Yin group)
Zhao Zhao	Fall 2008-Spring 2013 (now is post-doc in Harvard University, Shih group)
Minghui Liu	Fall 2008-Spring 2013 (now is post-doc in our group at ASU)

Current Graduate Students

Xixi Wei	Fall 2008-
Palash Dutta	Summer 2009-
Wei Li	Fall 2009-
Anirban Samanta	Fall 2009-
Fei Zhang	Fall 2010-
Shuoxing Jiang	Fall 2011-
Yuhe (Renee) Yang	Fall 2011-
Angela Edwards	Fall 2012-
Saswata Banerjee	Fall 2012-
Yu Zhou	Fall 2013-

Rotation students

Justin Flory	Summer 2009
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Cristiana Bockisch Fall 2013

Abhishek Debnath Fall 2013

C. Supervisor for Post-docs and visiting scholars

Current Post-docs

Dr. Alessio Andreoni Fall 2012-present

Dr. Ryan Nangreave Spring 2013-Present

Dr. Sara Henry Fall 2013-present

Post-docs worked with in the past

Dr. Junping Zhang Spring 2005-Summer 2007. Currently Nanomaterial Scientist in Carestream Company, Minnesota, USA.

Dr. Qiangbin Wang Spring 2006-Summer 2008. Currently Professor in Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, Suzhou, P.R. China.

Dr. Baoquan Ding Fall 2009-Fall 2010. Currently Professor in National Center for Nanosciences and Technology, Chinese Academy of Science, Beijing, P. R. China.

Dr. Reji Varghese Fall 2009-Fall 2010. Currently Assistant Professor in Indian Institute of Science Education and Research, India.

Dr. Andre Pinheiro Spring 2011-12/2011. Currently freelance consulting, UK.

Dr. Zhengtao Deng Spring 2009-09/2012 (PhD, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences. Currently Research Scientist in MIT, Boston)

Dr. Yang Yang Fall 2010-Fall 2012 (PhD, Tsinghua University, currently Post-doc at Yale University)

Dr. Yang Xu Fall 2011-Fall 2012 (PhD, Cancer Institute and Hospital, Chinese Academy of Medical Science, Beijing)

Dr. Jinglin Fu Fall 2010-Summer 2013 (PhD, Arizona State University, currently tenure track assistant professor in Rutgers University starting in 08/2013)

D. Host for summer high school students and teachers

Nickie Seto Summer 2009 (Student at Dobson High School, Mesa, AZ)

Nema Udom Summer 2009 (Teacher at Miami High School, Miami, AZ).

Jameel Hendricks Summer 2009 (Teacher)

Wiki space constructed: <http://mstf2009.wikispaces.com/Bio-Nanotech.+Design>

James Wang Summer 2008 and 2009, 2010 (Student at Hamilton High School, Chandler, AZ, currently BS student in Duke University)

Lindsey Edgerton Summer 2008 (student from McClintock High School))

Stephanie King Summer 2008 (teacher from McClintock High School)

Fiona Zhang Summer 2013 (student from Hamilton High School, Chandler)

Andrew Seo Summer 2013 (student from Hamilton High School, Chandler)

Linda Che Summer 2013 (student from Desert Vista High School, Tempe)

E. Host for visiting international exchange graduate student and visiting scholars***Exchange graduate student***

Zhilei Ge	Summer 2011-Spring 2013 (from Shanghai Institute of Applied Physics, Chinese Academy of Sciences)
Christian Rosen	Fall 2011 (from Aarhus University, Denmark)
Brian Wei	Summer 2008-Spring 2009 (from The Hong Kong University of Science and Technology)
Kasper Jahn	Summer 2008 (From Aarhus University, Denmark)
Casper Anderson	Spring 2008 (from Aarhus University, Denmark)
Elizabeth Sheyer	Fall 2013 (from Technische Universität Dresden, Germany)

Visiting Scholars

Dr. Lin Lin	01/2012-06/2012 (from Cancer Institute and Hospital, Chinese Academy of Medical Science, Beijing)
Dr. Yuhua Zhang	07/2011-06/2012 (from Medical School at Shandong University, Jinan)
Dr. Lei Wang	05/2010-05/2011 (from Medical School at Shandong University, Jinan)
Dr. Jingkun Xu	11/2010-04/2011 (from Jiangxi Science and Technology Normal University, Nanchang)

F. Graduate Advisory Committee Member or Oral Examination Committee member for Doctoral or Master students

Student name	Degree	Advisor	Time
Duo Li	PhD	Jerry Lin, Chemical Engineering	2007
Yinan Liu	MS	Giovanna Ghirlanda	2008
Ugur Demirok	PhD	Joseph Wang & Neal Woodbury	2007- 2010
Berea Williams	PhD	John Chaput	2007- 2010
Christopher Madden	PhD	Tom Moore	Fall 2008 (chair)
James Jursich	MS	Giovanna Ghirlanda	Spring 2009 (chair)
Manas Chakraborty	PhD	Marcia Levitus	Spring 2009
Daniel Mahlman	PhD	Daniel Buttry	Spring 2009 (chair)
Rui Liu	MS	John Chaput	Fall 2009-Spring 2010
Bing Jiang	PhD	John Chaput	Fall 2009-Spring 2013
Peter Josh Laughlin	MS	Giovanna Ghirlanda	Fall 2009-Spring 2010

Brian Page	BS	John Chaput	Spring 2010
JayHow Yang	PhD	Petra Fromme	Spring 2010
Jurgen Weber	MS	James Allen	Spring 2010
Olaf Shultz	PhD	Robert Ros, Physics	2010-2012
Sen Peng	PhD	Stuart Lindsay	Spring 2010
Wei Wang	PhD	Neal Woodbury	Spring 2010
Lin Gan	PhD	Alexander Ros	Spring 2011
Xiangyan Shi	PhD	Jeff Yarger	Spring 2011
Dian Xu	PhD	Jeff Yarger	Spring 2012
Suman Sen	PhD	Stuart Lindsay	Spring 2012
Shikha Manchanda	MS	Alexander Ros	Spring 2012
Elana Stennett	PhD	Marcia Levitus	Spring 2012
Jennifer Binder	PhD	Marcia Levitus	Spring 2012 (chair)
Ryan Yanashima	PhD	Mark Hayes	Spring 2012 (chair)
Warner Weber	PhD	Jeff Yarger	Summer 2012
Pankti Shah	PhD	John Chaput	Summer 2012 (Chair)
Iolanda Klein	PhD	Austin Angell	Fall 2012 (chair)
Monika Ciuba	PhD	Marcia Levitus	Spring 2013
Anasuya Pal	PhD	Josh Labear	Summer 2013
Fanyi Zhu	PhD	Mark Hayes	Summer 2013

SERVICES

University and Departmental Services

2007-2012, 5 years, Graduate Admission Committee, Department of Chemistry and Biochemistry

2010-2011, New Faculty Search Committee, Department of Chemistry and Biochemistry

2011-2013, Industrial Liaison Committee, Biodesign Institute

2012-2013, Committee on Faculty and Academic Professionals Awards, Department of Chemistry and Biochemistry

2013, New Faculty Search Committee, Department of Chemistry and Biochemistry and Biodesign Institute.

Professional Services Outside ASU

A. Grant Review Panel Service:

Panelist: National Institute of Health (PAR-07-271, Nanoscience and Nanotechnology in Biology and

Medicine), March 2008.

Ad Hoc Reviewer: North Carolina Biotechnology Center, March 2008.

Panelist: National Science Foundation (Biomaterial 2010 Career) October 2009.

Army Research Office (ARO) grant reviewer, October 2011.

Panelist: National Science Foundation (BMAT, MMA) February 2013.

Army Research Office (ARO) grant reviewer, January 2013.

B. Manuscript Review Service:

Review manuscripts for:

Nature, Nature Nanotechnology, Nature Communication, JACS, Angew. Chem. Int. Ed., Chem. Comm., J. Phys. Chem., Adv. Materials, Nano Letters. ACS Nano, Nanotechnology, Nano Scale, Biophysical Journal, Small, Langmuir, J. Materials, Pigment Cell Research, Photochemistry and Photobiology.

C. Volunteer as grand award judge for Intel Science and Engineering Fair (May 2013, Phoenix)

D. Professional Affiliations:

Member of American Chemical Society.

Member of ISNSCE (International Society for Nanoscale Science, Computation and Engineering)

Member of Material Research Society

PUBLICATIONS

Non-Peer Reviewed Journal Articles

4. **Y. Liu**, Nanomaterials: DNA Brings Quantum Dots to Order, *Nature Nanotechnology* 6, 463-464, **2011. (Invited News & Views)**

3. **Y. Liu**, H. Yan*, Designer Curvature, *Science*, 685-686, **2009 (Invited Perspective)**

2. **Y. Liu**, H. Yan*, Self-assembly: Coordinating Corners, *Nature Chemistry*, 1, 339 - 340 **2009. (Invited News and Reviews)**

1. J. D. Simon, **Y. Liu**, J. B. Nofsinger, Assembly and Aerobic Photoreactivity of Melanin. *The Spectrum*, Spring, **2002. (Invited review)**

Peer Reviewed Journal Articles

(In chronicle order, * marks the **corresponding author**, _____ marks the **student authors**)

On 11/27/13, total citation 5701, H-index= 45, i10-index=84.

<http://scholar.google.com/citations?user=urBf8SYAAAAJ>

A. At Arizona State University (2005-present)

2013 (15 published, 4 submitted, 3 in preparation)

In preparation:

*126. S. Jiang, H. Yan, Y. Liu, Kinetics of DNA tile assembly, In preparation. 2013.

125. Z. Zhao, J. Fu, A. Andreoni, N. W. Woodbury, Y. Liu, H. Yan*. DNA Origami Cage Trapping Enzymes: Protection and Boosting Enzyme Activity. In preparation. 2013.

124. A. Samanta, D. Zheng, H. Yan, Y. Liu*, DNA Conjugation and DNA Origami Directed Self-Assembly of IR Emitting Quantum Dots. In Preparation, 2013.

Submitted:

123. P.K. Dutta, S. Lin, A. Loskutov, S. Levenberg, R. Saer, J. T. Beatty, Y. Liu, H. Yan*, N. Woodbury*. An Engineered System to Enhance and Control the Absorption Cross-section of Photosynthetic Reaction Center. Submitted to *J. Am. Chem. Soc.* Nov. 2013.

122. W. Li, Y. Yang, S. Jiang, H. Yan, Y. Liu, Controlled Nucleation and Growth of DNA Tile Arrays within Prescribed DNA Origami Frames and Their Dynamics. Submitted to *J. Am. Chem. Soc.* Nov. 2013.

121. D. Wang, A. Taber, S. Capehart, S. Pal, M. Liu, P. Schuck, Y. Liu, H. Yan, M. Francis, and J. DeYoreo. Hierarchical Plasmonic Structures using Virus Capsid Scaffolds and DNA Origami Tiles. Submitted to *Nano Letts.* Oct. 2013.

120. J. Fu, Y. Yang, A. Johnson-Buck, M. Liu, Y. Liu, N. Walter, N. W. Woodbury, H. Yan*. An Engineered Multi-Enzyme Complex Utilizing Substrate Channeling by a Swinging Arm. Submitted to *Nature Nanotech.* Oct. 2013.

Published:

119. A. Samanta, Z. Deng, H. Yan, Y. Liu. A perspective on Functionalizing Colloidal Quantum Dots with DNA. In press, *Nano Research*, doi: 10.1007/s12274-013-0367-x, 2013.

118. Q. Mei, R. Johnson, X. Wei, F. Su, Y. Liu, L. Kelbaskas, S. Lindsey, H. Yan, D. Meldrum. On-chip Isotachopheresis Separation of Functional DNA Origami Capture Nanoarrays from Cell Lysate. *Nano Research*, 712-719, 2013.

117. D. Han, S. Jiang, A. Samanta, Y. Liu, H. Yan*, Unidirectional Scaffold-Strand Arrangement in DNA Origami, *Angew. Chem. Int. Ed.* 125, doi:10.1002/anie.201302177, 2013.

116. M. Liu, J. Fu, C. Hejesen, Y. Yang, N. W. Woodbury, K. Gothelf, Y. Liu, H. Yan*. A DNA-Tweezer Actuated Enzyme Nnaoreactor, *Nature Communications*. 4, doi:10.1038/ncomms3127, 2013.
--featured in ASU News

115. S. Pal, P. Dutta, Z. Deng, H. Yan, Y. Liu*. Quantum Efficiency Modification of Organic Fluorophores Using Gold Nanoparticles on DNA Origami Scaffolds. *J. Phys. Chem. C.*, 117, 12735-12744, 2013.

114. W. Li, H. Yan, Y. Liu, 3-input Majority logic gate and multiple input logic circuit based on DNA strand displacement. *Nano Lett.* 13, 2980-2988, 2013.

113. F. Zhang, H. Yan, Y. Liu*, Complex Archimedean Tiling Self-assembled from DNA Nanostructures, *J. Am. Chem. Soc.* 135, 7458-7461, 2013.

112. X. Liu, Y. Liu, H. Yan* Functionalized DNA Nanostructures for Nnaomedicine, *Israel Journal of Chemistry*, Special Issue: "Supramolecular Chemistry for Biology, Materials and Medicine", DOI: 10.1002/ijch.201300002, 2013.

111. X. Wei, J. Nangreave, H. Yan, Y. Liu, Mapping the Thermal Behavior of DNA Origami Nanostructures. *J. Am. Chem. Soc.* 135, 6165-6176, 2013.

110. Y. Yang, Z. Zhao, F. Zhang, J. Nangreave, Y. Liu, H. Yan*. Self-assembly of DNA rings from scaffold free DNA tiles. *Nano Lett.* 13, 1862-1866, **2013**.

109. J. Flory, S. Shinde, S. Lin, Y. Liu, H. Yan, G. Ghirlanda, P. Fromme*. PNA-peptide Assembly in a 3D DNA Nanocage at Room Temperature. *J. Am. Chem. Soc.* 135, 6985-6993, **2013**.

108. Z. Deng, S. Pal, A. Samanta, H. Yan, Y. Liu, DNA Functionalization of Colloidal ZnTe Nanowires for DNA Directed Self-Assembly of 1D-0D Hetero-Nanostructures. *Chemical Science*, 4(5) 2234-2240. **2013**.

107. O. Schultz, Z. Zhao, A. Ward, M. Koenig, F. Koberling, Y. Liu, J. Enderlein, H. Yan, R. Ros*. Tip induced fluorescence quenching for nanometer optical and topographical resolution, *Optical Nanoscopy* 2:1, **2013**.

106. D. Han, S. Pal, S. Jiang, Y. Yang, J. Nangreave, Y. Liu*, H. Yan*. DNA Gridirons nanostructures based on Four-Arm Junctions. *Science*. 339, 1412-1415. **2013**.

--featured in Science Daily

105. Z. Zhao, Y. Liu, H. Yan*, DNA Origami Templated Self-assembly of Discrete Length Single Wall Carbon Nanotubes. *Organic and Biomolecular Chemistry*. 11, 596-598. **2013**.

2012 (10 papers, 7 as corresponding author)

104. Z. Deng, A. Samanta, J. Nangreave, H. Yan, Y. Liu*, Robust DNA-Functionalized Core/Shell Quantum Dots with Fluorescent Emission Spanning from UV-vis to Near-IR and Compatible with DNA-Directed Self-Assembly. *J. Am. Chem. Soc.* 134, 17424-17427, **2012**. DOI: 10.1021/ja3081023
- featured in JACS Spotlights.

103. Y. Yang, D. Han, J. Nangreave, Y. Liu, H. Yan*. DNA origami with double stranded DNA as a Unified Scaffold. *ACS Nano*, 6, 8209-8215, **2012**. DOI: 10.1021/nn302896c.

102. X. Liu, Y. Xu, T. Yu, C. Clifford, Y. Liu, H. Yan*, Y. Chang*. A DNA Nanostructure Platform for Directed Assembly of Synthetic Vaccines, *Nano Letters*, 12, 4354-4259, **2012**. DOI:10.1021/nl301877k.

101. Z. Deng, D. Cao, J. He, S. M. Lindsay, Y. Liu, Solution Synthesis of Ultrathin Single-Crystalline SnS Nanoribbons for Photodetectors *via* Phase Transition and Surface Processing. *ACS Nano*, 6, 6197-6207. **2012**. DOI: 10.1021/nn302504p.

100. A. Pinheiro, J. Nangreave, S. Jiang, H. Yan, Y. Liu, Steric Crowding and the Kinetics of DNA Hybridization within a DNA Nanostructure System. *ACS NANO*. 6, 5521-5530, **2012**. DOI: 10.1021/nn301448y.

99. F. Zhang, J. Nangreave, Y. Liu, H. Yan*. Reconfigurable DNA Origami to Generate Quasi-Fractal Patterns. *Nano Letters* 12, 3290-3295, **2012**. DOI: 10.1021/nl301399z.

98. J. Fu, M. Liu, Y. Liu, H. Yan*. Spatially-Interactive Biomolecular Networks Organized by Nucleic Acid Nanostructures. *Accounts of Chemical Research*. Article ASAP, DOI: 10.1021/ar200295q, **2012**.

97. A. Samanta, Z. Deng, Y. Liu, Aqueous Synthesis of Glutathione-Capped CdTe/CdS/ZnS and CdTe/CdSe/ZnS Core/Shell/Shell Nanocrystal Hetero-structures. *Langmuir*, 28, 8205-8215, **2012**.

96. J. Fu, M. Liu, Y. Liu, N. Woodbury*, H. Yan*. Inter-enzyme substrate diffusion for an enzyme cascade organized on spatially addressable DNA nanostructures. *J. AM. Chem. Soc.* 134, 5516-5519. **2012**.

Shown in JACS spotlights: <http://pubs.acs.org/doi/full/10.1021/ja302665h>

Evaluated by Faculty of 1000, <http://f1000.com/14252960>

*95. Z. Li, L. Wang, H. Yan, **Y. Liu***, Effect of DNA Hairpin Loops on the Twist of Planar DNA Origami Tiles, *Langmuir*, 28, 1959–1965, **2012**.

2011 (12 papers, 10 as corresponding author)

*94. S. Pal, Z. Deng, H. Wang, S. Zou, **Y. Liu***, H. Yan*, DNA Directed Self-assembly of Anisotropic Plasmonic Nanostructures. *J. Am. Chem. Soc.* 133,17606–17609, **2011**.

*93. Z. Deng, D. Han, **Y. Liu***. Colloidal Synthesis of Metastable Zinc-Blende SnS Nanocrystals with Tunable Sizes. *Nanoscale* 3, 4346–4351, **2011**.

*92. P. Dutta, R. Varghese, J. Nangreave, S. Lin, H. Yan, **Y. Liu***. DNA-Directed Artificial Light-Harvesting Antenna. *J. Am. Chem. Soc.* 133, 11985-11993, **2011**.

Appear in JACS Beta Select focused on Advances at the Frontiers of Photochemical Sciences.

Highlighted by *Nature Chemistry*,

<http://www.nature.com/nchem/journal/v3/n9/full/nchem.1134.html>

91. C. Simmons, D. Schmitt, X. Wei, D. Han, A. M. Volosin, D. M. Ladd, D-K. Seo*, **Y. Liu**, and H. Yan*, Size Selective Incorporation of DNA Nanocages into Nanoporous Antimony-Doped Tin Oxide Materials. *ACS Nano*. 5, 6060-6068, **2011**.

*90. Z. Zhao, **Y. Liu***, H. Yan*, Organizing DNA Origami Tiles Into Larger Structures Using Pre-formed Scaffold Frames. *Nano Letts.* 11, 2997-3002, **2011**.

*89. X. Liu, H. Yan, **Y. Liu***, Y. Chang*, Targeted Cell-Cell Interactions by Multivalent Bi-specific Aptamers. *Small*, 7, 1673-1682, **2011**.

88. Q. Mei, X. Wei, F. Su, **Y. Liu**, C. Youngbull, R. Johnson, S. Lindsay, H. Yan*, D. Meldrum* Stability of DNA Origami Nanoarrays in Cell Lysates. *Nano Letts.* 11, 1477–1482, **2011**.

87. D. Han, S. Pal, J. Nangreave, Z. Deng, **Y. Liu***, H. Yan*. DNA Origami with Complex Curvatures in 3D Space. *Science* **332**, 342-344, **2011**.

- Featured as **cover story** of the April 15 issue of *Science*.
- This work was highlighted by National Science Foundation news release with video story.
- Reported in *Nature Methods* (**8**, 454, 2011) “DNA origami in 3D”.

86. S. Pal, R. Varghese, Z. Deng, H. Yan, **Y. Liu***. Site specific Synthesis and *in-situ* Immobilization of Fluorescent Silver Nanoclusters on DNA Nanoscaffolds Using Tollens’ Reaction. *Angew. Chem. Int. Ed.* 50, 4176-4179, **2011**.

*85. Z. Deng, L. Tong, M. Flores, S. Lin, J-X Cheng, H. Yan, **Y. Liu***, High-Quality Manganese-Doped Zinc Sulfide Quantum Rods with Tunable Dual-Color and Multiphoton Emissions, *J. Am. Chem. Soc.* 133, 5389–5396 **2011**.

*84. J. Nangreave, H. Yan, **Y. Liu***. DNA Nanostructures as Models for Evaluating the Role of Enthalpy and Entropy in Polyvalent Binding. *J. Am. Chem. Soc.* 133, 4490-4497, **2011**.

*83. Z. Zhao, **Y. Liu***, H. Yan*, Encapsulation of Gold Nanoparticles in a DNA Origami Cage. *Angew. Chem. Int. Ed.* 50, 2041-2044, **2011**.

-Selected as VIP paper by the editors.



2010 (12 papers, 7 as corresponding author)

*82. Z. Deng, H. Yan, **Y. Liu***, Controlled Colloidal Growth of Ultra-Thin Single-Crystal ZnS Nanowires with Magic-sized Diameter. *Angew. Chem. Int. Ed.* 49, 8695–8698, **2010**.

81. B. Ding, H. Wu, W. Xu, Z. Zhao, **Y. Liu**, H. Yu*, Hao Yan*, Interconnecting Gold Islands with DNA Origami Nanotubes. *Nano Letts.* 10, 5065–5069, **2010**.

*80. D. Han, S. Pal, **Y. Liu***, H. Yan*, Folding and Cutting DNA into Reconfigurable Topological Nanostructures, *Nature Nanotechnology.* 5, 712–717, **2010**. (Featured on the cover)

- Reported in RSC: Chemistry World “DNA origami with a twist”

<http://www.rsc.org/chemistryworld/News/2010/October/03101001.asp>

- Reported in Science Daily, “DNA Art Imitates Life: Construction of a Nanoscale Mobius Strip”
http://www.sciencedaily.com/releases/2010/10/101004101530.htm?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+sciencedaily+%28ScienceDaily%3A+Latest+Science+News%29

79. H. Pei, N. Lu, Y. Wen, S. Song, **Y. Liu**, H. Yan*, C. Fan*, A DNA Nanostructure-based Biomolecular Probe Carrier Platform for Electrochemical Biosensing, *Advanced Materials* 22, 4754–4758, **2010**.

- Featured on the cover

*78. Z. Li, M. Liu, L. Wang, H. Yan, **Y. Liu***, Molecular Behavior of DNA Origami in Higher Order Self-assembly, *J. Am. Chem. Soc.* 132, 13545–13552 **2010**.

77. J. Nangreave, D. Han, **Y. Liu**, H. Yan*, DNA Origami: A History and Current Perspective. (invited review) *Current Opinions in Chemical Biology.* 14, 608-615, **2010**.

76. N. Stephanopoulos, M. Liu, G. Tong, Z. Li, **Y. Liu**, H. Yan*, M. Francis*, Immobilization and One-Dimensional Arrangement of Virus Capsids With Nanoscale Precision Using DNA Origami, *Nano. Lett.* 10, 2714-2720, **2010**.

75. Z. Deng, O. Schulz, S. Lin, B. Ding, X. Liu, X. Wei, R. Ros, H. Yan, **Y. Liu***, Aqueous Synthesis of Zinc-Blende CdTe/CdS Magic-Core/Thick-Shell Tetrahedral Shaped Nanocrystals with Emission Tunable to Near-Infrared. *J. Am. Chem. Soc.* 132 (16), 5592–5593, **2010**.

74. R. Chhabra, J. Sharma, **Y. Liu**, S. Rinker, H. Yan*, DNA Self-assembly for Nanomedicine, *Advanced Drug Delivery Reviews.* 62, 617-625, **2010**.

73. S. Pal, Z. Deng, H. Yan and **Y. Liu***, DNA Origami Directed Self-assembly of Discrete Silver Nanoparticle Architectures, *Angew. Chem. Int. Ed.* 49, 2700 – 2704, **2010**.

-Selected by editor as VIP paper.

72. Z. Zhao, H. Yan, **Y. Liu***, A Route to Scale up DNA Origami using DNA Tiles as Folding Staples, *Angew. Chem. Int. Ed.* 49, 1414-1417, **2010**.

-This is reported by RSC Chemistry World news.

71. Q. Wang, H. Wang, C. Lin, J. Sharma, S. Zou, **Y. Liu***, Photonic Interactions between Quantum Dots and Au Nanoparticles in DNA Directed Self-assembly. *Chem. Commun.* 46, 240 – 242, **2010**.

2009 (12 papers. 6 as corresponding author)

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15. “Thermodynamics and Kinetics of DNA based self-assembly” **Y. Liu**, 18th conversation. Albany Stereodynamics Symposium, Albany, New York, June, **2013**.
14. “Thermodynamic and kinetic studies of self-assembly of DNA nanostructures” J. Nangreave, **Y. Liu**, ACS National Meeting, Philadelphia, PA, August, **2012**.
13. “DNA nano-architectures for photonic applications” **Y. Liu**, Foundation of Nanosciences (FNANO12), Snowbird, UT, April, **2012**.
12. “DNA nano-architectures for photonic applications” **Y. Liu**, Material Research Society Meeting, San Francisco, April, **2012**.
11. “DNA nano-architectures” **Y. Liu**, International Conference on RNA Nanotechnology & Therapeutics, Cleveland, Ohio, October **2010**.
10. “DNA based self-assembly” **Y. Liu**, Veeco Instruments, Santa Barbara, CA, August, **2010**.
9. “DNA based multi-valency”, **Y. Liu**. Foundation of Nanosciences (FNANO10), Snowbird, UT, April, **2010**.
8. “DNA Directed Self-Assembly of Proteins, Cells and Nanoparticles” **Y. Liu**. *BNI Neuroscience Conference*, Barrow Neurology Institute, St. Joseph’s Hospital and Medical Center, Phoenix, AZ. March, **2010**.
7. “DNA Directed Self-Assembly for Nanophotonics” **Y. Liu**, ONR grant kickoff seminars, Columbia University, New York, NY. December, **2009**.

6. "DNA directed self-assembly of nanoparticles and proteins" **Y. Liu**, DNA based nanotechnology, International workshop, Dresden, Germany. May, **2009**.
5. "DNA-tile based biodetection" **Y. Liu**, NanoKAP, 2008, *Utilizing Nano Technology for Detection Toxins and Pathogens*, Phoenix, AZ. November, **2008**.
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10. "Atomic Force Microscopy Studies of the Structural Morphology of *Sepia* Eumelanin" Yan Liu, C. Clancy, J. D. Simon, *American Society for Photobiology National Meeting*, Quebec City, Canada, July,

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31. "A Study of DNA Tube Formation Mechanism using 4,8,12-helix DNA tile Structure" Y. Ke, Y. Liu, J. Zhang, H. Yan, 3rd conference on Foundations of Nanoscience (FNANO06), Snowbird, Utah, April, **2006**.
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46. "Site-specific display of bacteriophage MS2 capsids on DNA origami scaffolds." M. Liu, N. Stephanopoulos, H. Yan, Y. Liu and M. Francis. FNANO10, Snowbird, Utah, April, **2010**.
47. "A route to scale up DNA origami using staple tiles". Z. Zhao, H. Yan, Y. Liu. FNANO10, Snowbird, Utah, April, **2010**.
48. "Size-dependent integration of DNA nanoarrays in live cells", X. Wei, C. Young, R. Johnson, D. Meldrum, S. Lindsay, Y. Liu, H. Yan. FNANO10, Snowbird, Utah, April, **2010**.
49. "Stain-free high resolution imaging of DNA origami based nanostructures using scanning transmission electron microscopy", Z. Deng, S. Pal, B. Ding, W. Li, Y. Liu, H. Yan, FNANO11, Snowbird, Utah, April, **2011**.
50. "DNA directed artificial light harvesting antenna", P. K. Dutta, R. Varghese, J. Nangreave, S. Lin, H. Yan, Y. Liu, FNANO11, Snowbird, Utah, April, **2011**.
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52. "Discrete Gold nanorod architectures scaffolded by DNA origami for nanophotonic applications", S. Pal, Z. Deng, H. Yan, Y. Liu, FNANO11, Snowbird, Utah, April, **2011**.
53. "Hybridization Kinetics of Higher-Order DNA Assemblies", A. V. Pinheiro, J. Nangreave, H. Yan, Y. Liu. DNA 17, Pasadena, CA, July, **2011**.
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57. “DNA Gridiron”, D. Han, Y. Liu, H. Yan. FNANO12, Snowbird, Utah, April, **2012**.
58. “Hybridization Kinetics of Multivalent DNA Tiles” Shuoxing Jiang, Dongran Han, Hao Yan and Yan Liu, FNANO13, Snowbird, Utah, April, 2013.
59. “DNA Origami Constructed From Parallel Helices”. D. Han, Y. Liu, H. Yan. FNANO13, Snowbird, Utah, April, 2013.
60. “Nucleic Acid Driven Polypeptide Assembly” J. Flory, S. Shinde, Y. Liu, H. Yan, G. Ghirlanda, P. Fromme, FNANO13, Snowbird, Utah, April, 2013.
61. “Self-assembly of Archimedean DNA Structures” F. Zhang, H. Yan, Y. Liu, FNANO13, Snowbird, Utah, April, 2013.
62. “Complex Archimedean Tiling Self-assembled from DNA Nanostructures ” Fei Zhang, Yan Liu and Hao Yan, DNA 19, Tempe, AZ, 2013 (oral presentation)
63. “Hybridization Kinetics of Multivalent DNA Tiles” Shuoxing Jiang, Dongran Han, Hao Yan and Yan Liu, DNA 19, Tempe, AZ, 2013.
- 64 “3-Input Majority Logic Gate and Multiple Input Logic Circuit Based on DNA Strand Displacement” Wei Li, Yang Yang, Yan Liu, Hao Yan. DNA 19, Tempe, AZ, 2013. (win the best poster award)
65. “Mapping the Thermal Behavior of DNA Origami Nanostructures”, Xixi Wei, Yan Liu and Hao Yan, DNA 19, Tempe, AZ, 2013.

PATENTS

1. SELF-ASSEMBLED NUCLEIC ACID NANOARRAYS AND USES THEREFOR

WO/2006/124089

Inventors: S. Lindsay, H. Yan, J. Chaput, **Y. Liu**, P. Zhang

2. SELF-ASSEMBLED COMBINATORIAL ENCODING NANOARRAYS FOR MULTIPLEXED BIOSENSING, WO Patent WO/2008/033,848, US Patent App. 12/374,259

H YAN, C LIN, E KATILIUS, Y LIU,

3. APTAMER PROBE FOR LOCATING MOLECULES AND METHOD OF USE

L Lin, H Yan, Y Liu, S Lindsay

US Patent App. 11/948,960

4. Novel Synthesis of Smart Multicolor Quantum Dots Barcode Nano/micro Structures and Applications Thereof

Provisional Patent filed

Inventors: H. Yan, Q. Wang, **Y. Liu**

5. Self-assembled Signaling Aptamer Arrays for Protein Detection

Provisional Patent filed

Inventors: H. Yan, C. Lin, **Y. Liu**

6. Building addressable Nanoparticle based Architectures for Sensitive Biosensing

Provisional Patent filed

Inventors: H. Yan, **Y. Liu**7. QUANTUM DOTS, RODS, WIRES, SHEETS, AND RIBBONS, AND USES THEREOF

H YAN, Z DENG, Y LIU WO Patent 2,013,052,541

8. A universal method for conjugation of oligonucleotide to quantum dots spanning from UV-vis to IR emission spectrum

Provisional Patent filed

Inventors: Z. Deng, H. Yan, **Y. Liu****SPONSORED RESEARCH GRANTS****Current Grant Supports: (Total awards to Liu: \$4.0 Million)**1. **NIH-R01** R01 GM088818 “Water Soluble Nanoarrays for Single-Cell Proteomics”,PI: H. Yan, **Co-PI:** S. Lindsay, D. Meldrum; **Y. Liu.** 08/2009-08/2014 (**5 years, \$1,800,000, Liu’s share 25%**)2. **DOE** “EFR Center for Bio-inspired Solar Fuel Production”Director: D. Gust, PIs: J. Allen, P. Fromme, G. Ghirlanda, A. Jones, **Y. Liu**, C. Miller, A. Moore, T. Moore, K. Redding, D. Seo, H. Yan. 08/2009-08/2014 (**5 years, \$14,020,000, Liu’s share 9%**)3. **DOD-ONR** N00014-09-1-1118 “DNA Based Three-dimensional Nanofabrication” 08/09/2009-08/08/2013PI: H. Yan, **Co-PI:** S. Lindsay (ASU), **Y. Liu** (ASU), with 6 subcontractors (**4 years, \$3,200,000, Liu’s share 11%**)4. **DOD-ONR** N00014-11-1-0727 “Colloidal Synthesis of Highly Tunable Semiconductor Quantum Materials” 05/01/2011 – 04/30/2014PI: **Y. Liu**, Co-PI: Z. Deng (**3 years, \$209,998, Liu’s share 75%**)5. **NSF** DMR-1104373 “DNA Origami Nanostructures with Complex Curvatures in 3D Space” 09/15/2011 – 08/31/2014PI: H. Yan, Co-PI: **Y. Liu.** (**3 years, \$400,000, Liu’s share 50%**)6. **DOD-ARO** W911NF-11-1-0137 “Molecular Engineering of Self-assembled Nano-reactors” 05/01/2011 – 04/30/2014PI. H. Yan, **Co-PI: Y. Liu, (3 years, \$360,000, Liu’s Share 50%)**7. Virginia G. Piper Personalized Medicine Bridge Awards, “DNA Nanoscaffold Directed Assembly of Programmable Zinc Finger Protein Mimics”, **\$62,158**, 04/01/2012-03/31/2013PI: H. Yan, **Co-PI: Y. Liu**, N. Woodbury.8. **DOD-Navy-ONR** “Translating Biochemical Pathways to Non-Cellular Environment”PI: H. Yan, **Co-PI: Y. Liu**, N. Woodbury, D. Seo, M. Bathe (MIT), W. Shih (Harvard), N. Walters (Michigan), 6/1/2012-5/31/2017 (**5 years, \$6,250,000, Liu’s share 10%**)

Recently Completed Grants

DOD-ARO W911NF-11-1-0416 “Confocal Raman Microscope for Imaging Surface Enhanced Raman Scattering” 06/15/2011 – 06/14/2012

PI: **Y. Liu**. (1 year, **DURIP instrument grant, \$175,000, Liu’s share 100%**)

NSF-CRET “DNA directed deterministic positioning of nanophotonic elements”

PI: **Y. Liu**. 08/01/2008-07/31/2012. (**3 years, \$200,748, Liu’s share 100%**)

DOD-ARO “Self-assembling DNA Architectures for Bio-inspired Engineering of Discrete and Multifunctional Nanostructures”

PI: H. Yan, **Co-PI: Y. Liu**, 08/01/2008-07/31/2011. (**3 years, \$300,000, Liu’s share 50%**)

NIH 1R21CA141021-01A2 “Tunable DNA-nanostructure to induce NK-mediated killing of tumor cells” 05/01/2010 – 04/30/2012

PI: Y. Chang, Co-PI: H. Yan and **Y. Liu**. (**2 years, \$352,735, Liu’s share 30%**)

DOD-ARO “Multi-Specific Aptamer-Nanoscaffolds To Induce Aptamer-Dependent Cellular Cytotoxicity (Apdcc) Against Breast Cancer Cells”

PI: Yung Chang, Co-PI: H. Yan, **Y. Liu**, 09/15/2009-10/14/2010 (**\$99,001, Liu’ share 20%**)

NSF “Purchase of an instrument for ultrafast, multidimensional fluorescence detection and imaging” (Liu’s share 3%)