JENNIFER N. CHA

Norviel Associate Professor, Department of Chemical and Biological Engineering, University of Colorado, Boulder
(office): 303-735-6735 (email): Jennifer.Cha@colorado.edu

(I) EDUCATION

B.A.	1996	Developmental Cell Biology, University of California, Berkeley
M.S.	1998	Chemistry, University of California, Santa Barbara
Ph.D.	2001	Chemistry, University of California, Santa Barbara

(II) APPOINTMENTS

- July 2012-present: Norviel Associate Professor, Department of Chemical and Biological Engineering, University of Colorado, Boulder
- Nov 2012-present: Fellow, Materials Science and Engineering Program, University of Colorado, Boulder
- July, 2012- present: Associate Professor, Adjunct, Department of Nanoengineering and Materials Science, University of CA, San Diego
- September, 2008 – June, 2012: Assistant Professor, Department of Nanoengineering and Materials Science, University of CA, San Diego
- January, 2004 – August, 2008: Research Staff Member, IBM Almaden Research Center, San Jose, CA
- July, 2002- December, 2003: Postdoctoral Research Associate, University of CA, Berkeley
- January, 2001 - June, 2002: Postdoctoral Research Associate, University of CA, Santa Barbara

(III) AWARDS/HONORS

- Invited Participant, Thirteenth Japanese-American Kavli Frontiers of Science Symposium, National Academy of Sciences, November 2012
- Norviel Faculty Fellow, University of Colorado, Boulder, 2012-2016
- Alfred P. Sloan Research Fellow, 2011
- DOE Early Career Award, 2011
- NSF CAREER Award, 2011
- DARPA Young Faculty Award, 2009
- Hellman Faculty Fellow Award, 2009
- National Academy of Engineering Frontiers of Engineering Symposium Attendee, Armonk, NY 2010
- IBM Innovation Research Award, 2005-2007
- IBM Research Division Award, 2004

(IV) PUBLICATION LIST

48. D.W. Domaille, **J.N. Cha***, "DNA Sequence-Specific Transimination with DNA-aniline Catalysts", *in prep* (2013)

47. P.F. Xu, J.H. Lee, C. Choi, S. Jin, J. Wang, **J.N. Cha***, "Enhanced Raman Signals from Switchable Nanoparticle Probes", *submitted* (2013)

46. J.H. Lee, P.F. Xu, D.W. Domaille, C. Choi, S. Jin, **J.N. Cha***, "Quantitative Surface Enhanced Raman Scattering Based Protein Detection and Identification via DNA-Conjugated M13 Bacteriophage and SERS active DNA core shell nanoparticles", *submitted* (2013)

45. P.F. Xu, H. Noh, J.H. Lee, D.W. Domaille, M. Nakatsuka, A.P. Goodwin*, **J.N. Cha*,** "The Role and Potential of DNA for Next-Generation Materials", *Materials Today, submitted (invited review),* 2013

44. D.W. Domaille, J.H. Lee, **J.N. Cha*,** "Conformationally Independent, Reversible DNA Conjugation to M13 Bacteriophage For Colorimetric and Fluorescence-Based Protein Biosensors", *Chemical Communications,* 49, 1759 - 1761 (2013)

43. S. Sattayasamitsathit, Y. Gu, K. Kaufmann, W. Jia, X. Xiao, M. Rodriguez, S. Minteer, **J. Cha**, D.B. Burckel, C. Wang, R. Polsky, J. Wang, "Highly-Ordered Multilayer 3D Graphene Decorated with Metal Nanoparticles", *Journal of Materials Chemistry A,* **1**, 1639-1645 (2013)

42. P.F. Xu, A.M. Hung H. Noh, **J.N. Cha*** "Switchable Nanodumbbell Probes for Analyte Detection", *Small* **9,** 228–232 (2013)

41. M. A. Nakatsuka, R. F. Mattrey, S. C. Esener, **J. N. Cha,*** and A. P. Goodwin.* "Aptamer-Crosslinked Microbubbles: Smart Contrast Agents for Thrombin-Activated Ultrasound Imaging." *Advanced Materials,* **24,** 6010-6 (2012)

40. J.-H. Lee, D. Domaille, **J.N. Cha*,** "Amplified Protein Detection and Identification through DNA-Conjugated M13 Bacteriophage", *ACS Nano*, **6,** 5621-5626 (2012)

39. S. Sattayasamitsathit, A.M. O'Mahony, X. Xiao, S.M. Brozik, C.M. Washburn, D.R. Wheeler, W. Gao, S. Minteer, **J. Cha**, D.B. Burckel, R. Polsky, J. Wang, "Highly Ordered Tailored Three-Dimensional Hierarchical Porous Gold Architectures", *J. Mater. Chem.* **22,** 11950-11956 (2012)

38. A.M. Hung, T. Oh, **J.N.Cha***, "Thermal Self-Assembly and Rapid Deposition of Vertically Aligned Semiconductor Nanorods Over Centimeter-Scale Areas", *Nanoscale* **4**, 1016-1020 (2012)

37. M.A. Nakatsuka, M.J. Hsu, S.C. Esener, **J.N. Cha*,** A.P. Goodwin, "DNA-Coated Microbubbles as Ultrasound Contrast Agents with Reversible Activity", *Advanced Materials,* **23**, 4908-4912 (2011)

36. L.M. Forbes, A.M. O'Mahony, S. Sattayasamitsathit, J. Wang, **J.N. Cha***, "Polymer End-Group Mediated Synthesis of Well-Defined Catalytically Active Platinum Nanoparticles", *J. Mater. Chem.* **21,** 15788 – 15792 (2011)

35. A.M. Hung, N. Konopliv, **J.N.Cha*,** "Solvent-Based Assembly of CdSe Nanorods in Solution", *Langmuir*, **27,** 12322-12328 (2011)

34. H. Noh, A.M. Hung, **J.N. Cha***, "Surface Drive DNA Assembly of Binary Cubic Three-Dimensional Nanocrystal Superlattices", *Small*, **7,** 3021-3025 (2011)

33. S. Sattayasamitsathit, A.M. O'Mahony, X. Xiao, S.M. Brozik, C.M. Washburn, D.R. Wheeler, **J. Cha**, D.B. Burckel, R. Polsky, J. Wang. "Highly dispersed Pt nanoparticle-modified 3D porous carbon: A metalized carbon electrode material", *Electrochem. Comm.* **13,** 856-860 (2011)

32. J.-H. Lee, **J.N.Cha***, "Bacteriophage Platforms for Amplified Protein Detection through Visible Plasmon Shifts in Gold Nanocrystal Solutions", *Analytical Chemistry,* **83,** 3516-3519 (2011)

31. P.F. Xu, H. Noh, J.-H. Lee, **J.N. Cha*,** "DNA mediated assembly of single walled carbon nanotubes: role of linkers and annealing", *Physical Chemistry Chemical Physics,* **13,** 10004-10008 (2011)

30. M. A. Nakatsuka, J.-H. Lee, M. J. Hsu, E. Nakayama, A. Hung, R. F. Mattrey, S. C. Esener*, **J. N. Cha***, and A. P. Goodwin*, "Facile One-Pot Synthesis of Polymer-Phospholipid Composite Microbubbles with Enhanced Drug Loading Capacity for Ultrasound-Triggered Therapy", *Soft Matter*, **7,** 1656-1659 (2011)

29. L.M. Forbes, A.P. Goodwin, **J.N.Cha*,** "Controlled Nucleation of Platinum Nanocrystals from Peptides", *Chemistry of Materials*, **22,** 6524-6528 (2010)

28. A.M. Hung*, H. Noh*, **J.N.Cha*,** "Recent Advances in DNA-Based Directed Assembly on Surfaces", (*invited)*, *Nanoscale*, **2,** 2530-2537 (2010)

27. H. Noh, C. Choi A.M. Hung, S. Jin, **J.N. Cha*,** "Site Specific Patterning of Highly Ordered Nanocrystal Superlattices through Biomolecular Surface Confinement", *ACS Nano,* **4,** 5076-5080 (2010)

26. J.N.Cha*, A.M. Hung, H. Noh, "Biomolecular Architectures and Systems for Nanoscience Engineering" (*invited)*, *Proc. of SPIE* Vol. 7637 763710-1 (2010)

25. A. Hung, C.M. Micheel, L.D. Bozano, *L.W. Osterbur*, G.M. Wallraff, **J.N. Cha*,** "Spatially-Directed Assembly of Gold Nanoparticles on Lithographically Patterned DNA Origami", *Nature Nanotechnology* **5**, 121 - 126 (2010)

24. H.Noh, H. Noh, A.M. Hung, C. Choi, J.H. Lee, J.-Y. Kim, S. Jin, **J.N. Cha*** "50nm DNA Nanoarrays Generated from Uniform Oligonucleotide Films", *ACS Nano*, 3, 2376–2382 (2009)

23. R. Kershner, L. Bozano, C.M. Micheel, A. Hung, A. Fornoff, **J.N. Cha**, C. Rettner, M. Bersani, J. Frommer, P.W.K. Rothemund, G. Wallraff, "Placement and orientation of DNA nanostructures on lithographically patterned surfaces", *Nature Nanotechnology*, 4, 557 - 561 (2009)

22. B. Atmaja, **J.N. Cha**, C.W. Frank, "Adsorbed a -Helical Diblock Copolypeptides: Molecular Organization, Structural Properties, and Interactions", *Langmuir* 25, 865-872, (2009)

21. B. Atmaja, **J.N. Cha**, A. Marshall, C.W. Frank, "Supramolecular Assembly of Block Copolypeptides with Semiconductor Nanocrystals" *Langmuir*, 25, 707-715, (2009)

20. J.W. Galusha, L.R. Richey, J.S. Gardner, **J.N. Cha**, M.H. Bartl, "Discovery of a diamond-based photonic crystal structure in beetle scales" *Phys. Rev. E,* 77(5-1), (2008)

19. C. Buie, A. Fornoff, *C.M. Micheel*, **J.N. Cha***, "Directed assembly of gold nanoparticles on modified DNA origami", *Polymer Preprints* ACS, 49(1), 1117-1118, (2008)

18. Y. Zhang, H.-S. P. Wong, S. Raoux, **J.N. Cha**, C.T. Rettner, L.E. Krupp, T. Topuria, D.J. Milliron, P.M. Rice, J.L. Jordan-Sweet, "Phase change nanodot arrays fabricated using a self-assembly diblock copolymer approach" Appl. Phys. Lett., 91, 131041-131043, (2007)

17. J.N. Cha*, Y. Zhang, H.-S. P. Wong, S. Raoux, C. Rettner, L. Krupp, V. Deline, "Biomimetic Approaches for Fabricating High-Density Nanopatterned Arrays", *Chem. Mater.*, 19, 839-843 (2007)

16. D.A. LaVan and **J.N. Cha***, "Approaches for biological and biomimetic energy conversion", *Proc. Natl. Acad. Sci.*, 103, 5251-5255 (2006)

15. *B. Parrish*, **J. N. Cha***, "Peptide end-functionalized block copolymers prepared by reversible addition-fragmentation chain transfer polymerization". *PMSE Preprints*, ACS, 47, 588 (2006)

14. *B. Gigliotti, B. Sakizzie*, D.S. Bethune, R.M. Shelby, **J.N. Cha***, "Sequence-Independent Helical Wrapping of Single-Walled Carbon Nanotubes by Long Genomic DNA", *Nanoletters*, 6, 159-164 (2006)

13. *E. M. Freer*, **J.N. Cha**, J.L. Hedrick, R.D. Miller, H.-C. Kim, "Nanostructured organosilicates from self-assembled block copolymer / silsesquioxane mixtures", *PMSE Preprints*, 92, 69-70. (2005)

12. *E. M. Freer*, L. E. Krupp, W.D. Hinsberg, P. M. Rice ; J.L. Hedrick, **J.N. Cha**, R.D. Miller, H.-C. Kim, "Oriented Mesoporous Organosilicate Thin Films", *Nanoletters*, 5, 2014-2018 (2005)

11. T. Magbitang, V.Y. Lee, **J.N. Cha**, H.-L. Wang, R.W. Chung, R.D. Miller, G. Dubois, W. Volksen, H.-C. Kim, J.L Hedrick, "Oriented nanoporous lamellar organosilicates templated from topologically unsymmetrical dendritic-linear block copolymers", *Angew. Chem. Int. Ed.*, 44, 7574-7580 (2005)

10. A. Fu, C.M. Micheel, **J. N. Cha**, H. Chang, H. Yang, A.P. Alivisatos, "Discrete Nanostructures of Quantum Dots/Au with DNA", *J. Am. Chem. Soc.*, 126, 10832-10833 (2004)

9. V.S. Murthy, **J.N. Cha**, G.D. Stucky, M.S. Wong, "Charge-Driven Flocculation of Poly(L-lysine)-Gold Nanoparticle Assemblies Leading to Microspheres", *J. Am. Chem. Soc.*, 126, 5292-5299 (2004)

8. J.N. Cha, H. Birkedal, L.E. Euliss, M. H. Bartl, M.S. Wong, T.J. Deming, G.D. Stucky, "Spontaneous Formation of Nanoparticle Vesicles from Homopolymer Polylectrolytes", *J. Am. Chem. Soc.*, 125, 8285-8289 (2003)

7. J. N. Cha, M.H. Bartl, M.S. Wong, A. Popitsch, T.J. Deming, G. D. Stucky, "Microcavity Lasing from Block Peptide Hierarchically Assembled Quantum Dot Spherical Resonators", *Nanoletters*, 3, 907-911 (2003)

6. J.N. Cha, M.S. Wong, K.S. Choi, T. J. Deming, G. D. Stucky, "Assembly of Nanoparticles into Hollow Spheres Using Block Copolypeptides", *Nanoletters*, 2, 583-587 (2002)

5. J.N. Cha, G.D. Stucky, D.E. Morse, T. J. Deming, "Block Copolypeptide Mediated Biomimetic Synthesis of Ordered Silica Structures", *Nature*, 403, 289-292 (2000)

4. J.N. Cha, K. Shimizu, Y. Zhou, T.J. Deming, G.D. Stucky, D.E. Morse, "Learning from Nature: Novel Routes to Biomimetic Synthesis of Silica Structures", *MRS Symposium* (Mineralization in Natural and Synthetic Biomaterials, Boston, November 1999)

3. Y. Zhou, K. Shimizu, **J.N. Cha**, G.D. Stucky, D.E. Morse, "Efficient catalysis of polysiloxane synthesis by silicatein a requires specific hydroxyl and imidazole functionalities", *Angew. Chem. Int. Ed.*, 38, 780-782 (1999)

2. J.N. Cha, K. Shimizu, Y. Zhou, S.C. Christiansen, B.F. Chmelka, G.D. Stucky, D.E. Morse, "Silicatein filaments and subunits from a marine sponge direct the polymerization of silica and silicones in vitro", *Proc. Nat. Acad. Sci.*, 96, 361-365 (1999)

1. K. Shimizu, **J.N. Cha**, G.D. Stucky, D.E. Morse, "Silicatein a: Cathepsin L-like protein in sponge biosilica", *Proc. Nat. Acad. Sci.*, 95, 6234-6238 (1998)

(V) BOOK CHAPTERS

1. *A.M. Hung*, **J.N. Cha*** "Templated Assembly of DNA Origami Gold Nanoparticle Arrays on Lithographically Patterned Surfaces", DNA Nanotechnology: Methods and Protocols, Eds. G. Zuccheri and B. Samori, Methods in Molecular Biology, **749**, pp 181-197, Springer Protocols, Humana Press (2011)

(VI) PATENTS

8. U.S. Patent Publication Number: US 7,759,063 B2 "DNA-based functionalization of single walled carbon nanotubes for directed assembly", **J.N. Cha**, C.M. Micheel

7. U.S. Patent Number: US 7,625,702 B2 "Helical Wrapping of Single-Walled Carbon Nanotubes by Genomic DNA", **J.N. Cha**

6. International Patent Publication Number: WO 07/057263 "Water castable-water strippable topcoat for immersion lithography", P.J. Brock, **J. Cha**, D. Gil, C.E. Larson, L.K. Sundberg, G. Wallraff, IBM

5. U.S. Patent Publication Number: US 2006/240240 "Nanoporous organosilicate media with lamellar structures", **J.N. Cha**, G. J.-M. Dubois, J.L. Hedrick, H.-C. Kim, V. Y.-W. Lee, T.P. Magbitang, R.D. Miller, W. Volksen, IBM

4. U.S. Patent Publication Number: US 2006/241194 "Nanoporous media templated from unsymmetrical amphiphilic porogens", **J.N. Cha**, G. J-M. Dubois, J.L Hedrick, H.-C. Kim, V. Y.-W. Lee, T.P. Magbitang, R.D. Miller, W. Volksen, IBM

3. US Patent Publication Number: US 2003/082237 "Nanoparticle Assembled Hollow Spheres of Block Polypeptides**", J.N. Cha**, T.J. Deming, G.D. Stucky, M.S. Wong, H. Birkedal, M.H. Bartl, J.L. Sumerel, University of CA, Santa Barbara

2. International Patent Publication Number: WO 02/84271 "Methods and Sensors for Luminescent and Optoelectronic Detection and Analysis of Polynucleotides", **J.N. Cha**, G.D. Stucky, D.E. Morse, University of CA, Santa Barbara

1. International Patent Publication Number: WO 00/35993 "Methods, Compositions, and Biomimetic Catalysts for in vitro Synthesis of Silica, Polysilsequioxane, polysiloxane, and polymetallo-oxanes", Morse, D.E., Stucky, G.D., Deming, T.J., **Cha, J.N**., Shimizu, K., Zhou, Y., University of CA Santa Barbara

(VII) INVITED TALKS

61. ***Invited*** Keynote Speaker, 9th World Congress of Chemical Engineering, August 2013, Seoul, Korea

60. ***Invited*** Speaker, 2013 US-China Workshop on Solar Energy and Environment, May 2013, National Academy of Sciences, Washington, DC

59. ***Invited*** Speaker, Bioscience Seminar Series, Sandia National Lab, January 2013

58. ***Invited*** Speaker, Department of Chemical Engineering and Materials Science, University of Minnesota, October 2012

57. ***Invited*** Speaker, ICYRAM, Singapore July 2012

56. ***Invited*** Speaker and Chair, American Chemical Society Symposium "New Frontiers in Stimuli-Responsive Supramolecular Assemblies", PMSE Division, San Diego, CA, March 25-29, 2012

55. ***Invited*** Speaker 14th Annual Perspectives on Science (POS) Lecture/Dinner Series at Point Loma Nazarene University, April 2012

54 ***Invited*** Speaker, US-Korea Workshop On Nano-Biotechnology, Dallas, May 2012

53. ***Invited*** Speaker, Materials Research Society Meeting San Francisco, DNA Nanotechnology, April 2012

52. ***Invited*** Speaker, Jacobs School of Engineering Research Expo, University of CA, San Diego, April 2012

51. ***Invited*** Keynote Speaker, Foundations of Nanoscience, Snowbird , Utah, April 2012

50. ***Invited*** Speaker, Department of Chemical Engineering, University of Michigan, Ann Arbor, March 2012

49. ***Invited*** Speaker, Department of Chemical and Biological Engineering, University of Colorado, Boulder, January 2012

48. ***Invited*** Speaker, Yonsei University, Korea, Dec 2011

47. ***Invited*** Speaker, 7th International Conference on Advanced Materials and Devices (ICAMD 2011) Jeju Island, Korea, Dec 2011

46. Invited Speaker, Department of Chemical and Biomolecular Engineering, Johns Hopkins University, Nov 2011

45. ***Invited*** Speaker, Berkeley Nanoscience and Nanoengineering Institute, UC Berkeley, Dec 2011

44. ***Invited*** Speaker, Department of Chemical Engineering and Materials Science, UC Irvine Oct 2011

43. ***Invited*** Speaker, Composite Materials, Lake Louise, Canada, Nov 2011

42. ***Invited*** Speaker, Industry Board Meeting, Nanoengineering Dept., UCSD, April 2011

41. ***Invited*** Speaker, Professor Dan Morse Symposium, UC Santa Barbara, April 15, 2011

40. ***Invited*** Speaker, American Chemical Society National Meeting, Anaheim, CA March 2011

39. ***Invited*** Speaker, NSF-DFG Conference, New York, March 2011

38. ***Invited*** Speaker, "Workshop on Exploring Biological Interfaces", Caribe Hilton, San Juan, Puerto Rico, April 2011

37. ***Invited*** Speaker, CMOSET, Whistler, 2011

36. ***Invited*** Participant- NAE Frontiers in Engineering, 2010

35. ***Invited*** Speaker, International NanoBio 2010 Conference, 24 – 27 August 2010, ETH Zurich.

34. Invited Speaker, ACS-Poly**,** Boston MA, August, 2010

33. ***Invited*** Speaker, EIPBN, June 2010, Anchorage, Alaska, 2010

32. ***Invited*** Speaker, Materials Research Society Spring Meeting, 2010

31. ***Invited*** Speaker, SPIE Lithography, San Jose, CA, February 2010

30. ***Invited*** Speaker, Columbia University, November 2009

29. ***Invited*** Keynote Speaker, NanoThailand Symposium 2008, Bangkok, Thailand, November 2008

28. ***Invited*** Presentation, BNNI, UC Berkeley, October 31, 2008

27. ***Invited*** Presentation, "Nanostructure Fabrication", Gordon Research Conference, July 2008

26. ***Invited*** Presentation, International Workshop on Nanobiotechnology, Ispra, Italy, June 3-4, 2008

25. ***Invited*** Presentation, NSTI Nanotech 2008, Nanostructured Surfaces and Interfaces, Boston, MA, June 1-5, 2008

24. ***Invited*** Attendee, "IBM Global Technical Leadership Exchange", Orlando, FL, April 6-9, 2008

23. ***Invited*** Presentation, "Opportunities for Nanostructured Polymeric Materials for Device Fabrication", Lake Tahoe, NV, Nov 4-8, 2007

22. ***Invited*** Presentation, "3rd NASA-NIST Workshop on Nanotube Measurements", September 26-28, 2007, Gaithersburg, MD

21. ***Invited*** Presentation, "Polymers-East", Gordon Research Conference, June 2007

20. ***Invited*** Presentation, "Applications of Nanotubes and Nanowires", Materials Research Society Meeting, SF, CA, April 2007

19. ***Invited*** Presentation, "Materials Research Outreach Symposium", University of CA, Santa Barbara, January 2007

18. ***Invited*** Presentation, "30th Annual Symposium, Macromolecular Science and Engineering", University of Michigan, Oct 2006

17. ***Invited*** Presentation, "Carbon Nanotube Separation, FACSS 2006", Orlando, Fl, Sept 2006

16. ***Invited*** Presentation, "CPIMA Forum" Stanford University, August 10 2006

15. ***Invited*** Presentation, "US-Japan Nano-Hybrid Conference", Monterey, CA, May 2006

14. ***Invited*** Presentation, "The Future of Global Manufacturing, Nanotechnology", Santa Clara Convention Center, May 2006

13. ***Invited*** Seminar, Berkeley Nanoscience and Nanoengineering Institute (BNNI) & Bioengineering Dept, University of CA, Berkeley, April 11, 2005

12. ***Invited*** Poster, Presenter, Workshop Participant, National Academices Keck Future Initiative, "Designing Nanostructures Conference", November 18-21, 2004

11. ***Invited*** participant, National Academies Keck Future Initiative, "Designing Nanostructure Pre-Conference", Sept. 18-19, 2004

10. ***Invited*** Poster, Frontiers of Chemistry, Kloster Seeon, Germany, July 16, 2004

9. ***Invited*** Chair of *Tissue Engineering and Biomineralization* session, Frontiers of Chemistry, Kloster Seeon, Germany, July 16, 2004

8. ***Invited*** Talk, July 7, 2004, NASA/AMES Workshop, July 7, 2004,

7. ***Invited*** Talk, March 10, 2002: "Soft Solution Processing", Schloss Ringberg, Germany

6. ***Invited*** Talk, March 6, 2002: "Biomimetic Engineering", Destin, FL

5. ***Invited*** Talk, May 8, 2001: "Bio-inspired Materials", University of Minnesota, Twin Cities, Minneapolis, MN

4. ***Invited*** Talk, January 18, 2001: Pacific Northwest National Laboratories, Batelle, Richland, WA

3. ***Invited*** Talk, December 16, 2000: "American Chemical Society, 2000", Honolulu, HI

2. ***Invited*** Talk, August 15, 2000: "Gordon Research Conference, Biomineralization", New Hampshire

1. ***Invited*** Talk, June 5, 2000: Conference, "Society for Experimental Mechanics, Inc.", Orlando, FL

(VIII) CONFERENCE PROCEEDINGS:

23. M.A. Nakatsuka, R.F. Mattrey, S.C. Esener, **J.N. Cha**, A.P. Goodwin, "Aptamer Crosslinked Microbubbles for Biochemically Specific Detection of Acute Thrombosis by Contrast Enhanced Ultrasonography", 2012 Student Annual Research Symposium (StARS), University of Colorado ,Boulder, October 2012, *2nd Place Awardee Overall*

22. L.M. Forbes, A. O'Mahony, S. Sattayasamitsathit, J. Wang, **J.N. Cha**, "Ligand Effects on Platinum Nanoparticle Synthesis and Catalytic Activity", Jacobs School of Engineering EXPO 2012, UC San Diego, April 2012

21. P.F. Xu, A.M. Hunh, H. Noh, **J.N. Cha**, "Switchable Nanodumbbell Probes for Analyte Detection" Jacobs School of Engineering EXPO 2012, UC San Diego, April 2012, *Honorable Mention Poster Awardee*

20. D.W. Domaille, J.H. Lee, **J.N. Cha**, "Synthesis, Characterization, and Protein Sensing Applications of M13 Bacteriophage-DNAzyme Bioconjugates", American Chemical Society Spring Meeting, San Diego, CA, March, 2012

19. L.M. Forbes, A. O'Mahony, S. Sattayasamitsathit, J. Wang, **J.N. Cha**, "Effects of various functional groups on the growth of platinum nanoparticles and catalytic activity toward ORR", American Chemical Society Spring Meeting, San Diego, CA, March, 2012

18. J.H. Lee, **J.N. Cha,** "Colorimetric Protein Detection: Plasmonic Shift Via DNA-Au Nanoparticle Flocculation based on Chmically Engineered DNA-M13 Bacteriophage Platform" Spring 2012 Materials Research Society National Meeting, San Francisco, CA, April 2012

17. M. A. Nakatsuka, M.J. Hsu, S.C. Esener, **J.N. Cha,** A.P. Goodwin, "DNA-Coated Microbubbles with Tunable Ultrasound Contrast Activity for Thrombin Sensing" Spring 2012 Materials Research Society National Meeting, San Francisco, CA, April 2012

16. P. Xu, H. Noh, **J.N. Cha**, "Directed Assembly of Carbon Nanotubes through Specific DNA Hybridization". Spring 2011 Materials Research Society National Meeting, San Francisco, CA April 2011

15. M.A. Nakatsuka, M.J. Hsu, S.C. Esener, **J.N. Cha**, A.P. Goodwin, "Tuning of Microbubble Response to Ultrasound through DNA Crosslinking of the Encapsulating Shell", Spring 2010 Materials Research Society National Meeting, San Francisco, CA, April 2011.

14. J.H. Lee, **J.N. Cha,** "Chemically Modified M-13 Bacteriophages for Amplifiable Colorimetric Antigen Detection", Spring 2010 Materials Research Society National Meeting, San Francisco, CA, April 2011

13. L.M. Forbes, **J.N. Cha**, "Bioinspired routes for synthesizing efficient nanoscale platinum electrocatalysts", Abstracts of Papers, 241st ACS National Meeting, Anaheim, CA, March 27-31 (2011)

12. A.P Goodwin, M.A. Nakatsuka, E. Nakayama, M.J. Hsu, R.F. Mattrey, S.C. Esener, **J.N. Cha**, "DNA-polymer-lipid shelled microbubbles with tunable ultrasound contrast properties", PMSE Preprints, ACS National Meeting, Anaheim, CA (2011)

11. A.P. Goodwin, M.A. Nakatsuka, M.J. Hsu, R.F. Mattrey, S.C. Esener, **J.N. Cha**, "Stimulus-responsive ultrasound contrast agents from microbubbles stabilized by polymer-phospholipid assemblies", PMSE Preprints, ACS National Meeting, Boston MA (2010)

10. H. Noh, A.M. Hung, C. Choi, S. Jin, **J.N. Cha**, "Low-cost, High-throughput nanoscale patterning of DNA for nanomaterial assembly", Spring 2010 Materials Research Society National Meeting, San Francisco, CA, April 2010

9. A.M. Hung, **J.N. Cha**, "Interfacing micro with nano: the role and potential of biomolecular architectures", Polymer Preprints, **51,** 114-115 (2010)

8. C. Buie, A. Fornoff, C.M. Micheel, **J.N. Cha**, "Directed assembly of gold nanoparticles on modified DNA origami", Polymer Preprints, **49,** 1117-1118 (2008)

7. C.M. Micheel, **J.N. Cha**, "Selective placement and orientation of DNA-wrapped single-walled carbon nanotubes on metal and semiconductor surfaces", Abstracts of Papers, 232nd ACS National Meeting, San Francisco, CA, Sept 10-14, 2006

6. B. Parrish, **J. Cha**, "Peptide end-functionalized block copolymers prepared by reversible addition-fragmentation chain transfer polymerization", Polymer Preprints, **47,** 588 (2006).

5. E.M. Freer, **J.N. Cha**, J.L. Hedrick, R.D. Miller, Kim, H.-C. "Nanostructured organosilicates from self-assembled block copolymer/silsequioxane mixtures" PMSE Preprints, **92,** 69-70 (2005)

4. V. Murthy, **J.N. Cha**, G.D. Stucky, M.S. Wong, "Assisted self-assembly of nanoparticles into hollow microspheres", Abstracts of Papers, 226th ACS National Meeting, New York, NY, Sept 7-11, 2003.

3. H. Birkedal, M.H. Bartl, **J.N. Cha**, G.D. Stucky, "Large photoactivated increase in photoluminescence intensity and ligand decomposition in citrate stabilized CdSe nanoparticles", Abstracts of Papers, 226th ACS National Meeting, New York, NY, Sept 7-11, 2003

2. L.E. Euliss, **J.N. Cha**, D.E. Morse, T.J. Deming, G.D. Stucky, "Organization of Calcium Carbonate on a Multi-Dimensional Length Scale", Abstracts of Papers, 223rd ACS National Meeting, Orlando, FL, April 7-11, 2002

1. J.N. Cha, T.J. Deming, D.E. Morse, G.D. Stucky, "Lessons from nature: Novel design strategies for biomimetic silica synthesis", Book of Abstracts, 219th ACS National Meeting, SF, CA, March 26-30, 2000, INOR-436

(IX) STUDENTS AND POSTDOCTORAL RESEARCHERS

Current graduate students and postdoctoral researchers mentored:

1. Ju-Hun Lee (Mat Sci, UCSD)
2. Hyunwoo Noh (Mat Sci, UCSD)
3. Lauren Forbes (Chem, UCSD)
4. Matt Nakatsuka (Mat Sci, UCSD)
5. Phyllis Xu (Mat Sci, UCSD)
6. Michael Brasino (Mat Sci, CU)
7. Taeseok Oh (Mat Sci, CU)
8. Sam Goodman (ChBE, CU)
9. Ke Ma (ChBE, CU)
10. Dr. Dylan Domaille (Ph.D. Chemistry, UC Berkeley)

Current and past undergraduate students:

1. Ms. Joo Hye Lee (Pharm Chem)
2. Ms. Emi Nakayama (ChemE)
3. Mr. Alan Toledo (ChemE)

4. Ms. Yu-Fan Shih (ChemE)
5. Mr. Nathan Konopliv (ChemE)
6. Mr. Otto Ho (ChemE)
7. Mr. Xiaolong Qiu (ChemE)
8. Mr. Elliot Blanford (ChemE)
9. Mr. Christopher Chu (Regents Scholar)
10. Ms. Katherine Liu (Regents Scholar)

Former (while at IBM): Ms. Brittany Gigliotti (B.S., 2006), Ms. Brenda Sakizzie (B.S., 2006), Ms. Vivan Ng (M.S., 2006), Mr. Caesar Buie (B.S., 2008), Mr. Lucas Obsterbur (B.S. 2009), Dr. Bryan Parrish (Ph.D. UMass, now at Clorox), Dr. Christine Micheel (Ph.D. UC Berkeley, now at National Academy of Science)

Alumni:
1. Ms. Sarah Chowdury (Mat Sci)
2. Ms. Claudia Meneses Shuldberg (ChemE)
3. Dr. Albert Hung (Ph.D. Materials Science, Northwestern University)

(X) UNIVERSITY SERVICE

A. Departmental:

AT UCSD:
1. UCSD Jacobs School of Engineering (JSOE) scholar day faculty host (2009)
2. Faculty presenter at the San Diego Science Festival, 2009
3. Founding member of the Nanotechnology Research Foundation (NRF)
4. Design and implementation of new graduate and undergraduate level courses for Nanoengineering (Nanofabrication (W '09), Intermolecular Forces (F'09, '10, '11), Biochemical Principles of Nanoengineering (Spring, '12))
5. Nanoengineering Graduate committee faculty member
6. Diversity Representative for Nanoengineering for Jacobs School of Engineering
-Faculty advisory member of JSOE IDEA (Inclusion, Diversity, Excellence and Advancement) Center
7. Academic Senate Faculty Representative for Nanoengineering

AT CU BOULDER:
1. Faculty member, Faculty Committee, 2012
2. Faculty Fellow, Materials Science and Engineering Program, 2012

B. College:

AT UCSD:
1. Jacobs School Diversity Council, Faculty Representative from Nanoengineering
2. IDEA Center Faculty Member (Engineering Advisory Council)
3. Committee member for senate and thesis exams for materials science, nanoengineering and chemistry students

4. Co-Lead of NSF Center Grant (NERC) [Shaochen Chen Lead, Ken Vecchio Deputy Director], submitted September 2011
5. Co-PI of NSF STEP (Science, Technology, Engineering and Mathematics Talent Expansion Program) proposal submitted from Jacobs School, 2011

AT CU BOULDER:
1. Faculty Fellow, Materials Science and Engineering Program, 2012

C. UCSD Campus:

1. Faculty member of the Moores UCSD ET-CURE undergraduate program
2. Faculty advisor and host for Regents Scholar Research Initiative (RSRI) mentor program
3. Faculty member, UCSD Diversity Council
4. UCSD Academic Senate: Faculty representative from Nanoengineering

D. System-Wide:

1. Molecular Foundry user proposal reviewer (2008-present)
2. Chair and organizer of Symposium (New Frontiers in Stimuli-Responsive Supramolecular Assemblies) for the American Chemical Society National Meeting, San Diego, CA, March 2012
3. Active reviewer for journal letters and articles in *J. Am. Chem. Soc., Langmuir, Nanoletters, Advanced Materials, Small, Nature Nanotechnology, ACS Nano, Analytical Chemistry, J. of Nanoparticle Research, Nature Materials*
4. NSF Panel Reviewer (SBIR, MRSEC reverse site visit, CMMI-Nanomanufacturing, DMR-Biomaterials Career, CMMI-Biosensing) **2012**
5. Mail Reviewer for national funding agencies (ONR, AFOSR, DOE, DOE Early Career, NSF) **2012**

(XI) TEACHING

1. Winter 2009: CENG 208 Advanced Nanofabrication (Grad):
*100% recommend instructor (@UCSD)
2. Fall 2009, 2010, 2011: Intermolecular and Colloidal Forces (Grad)
*92% (F'09) and 100% (F'10) recommend instructor (@UCSD)
3. Winter 2010, 2011, 2012: Chemical Engineering Thermodynamics (Undergrad)
*74% (W'10) and 89% (W'11) recommend instructor (@UCSD)
4. Spring 2012: Biochemical Principles of Nanoengineering (Undergrad) (@UCSD)
5. Spring 2013: Biology for Engineers (Freshman) (@CU Boulder)