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Education and Professional Training

Postdoctoral Fellow Lawrence Berkeley National Laboratory Aug. 2007- Present
(Jointly in Biological and Inorganic Nanostructure facilities at The Molecular Foundry, LBNL, Berkeley CA)
Visiting Postdoc, University of Chicago Jan. 2008 - Feb. 2008.
Ph.D. in Chemistry University of Massachusetts, Amherst Aug. 2002 - Aug. 2007
M. S. in Inorganic Chemistry Nanjing University, China 1999 - 2002
B. S. in Chemistry Nanjing University, China 1995 - 1999

Professional Experience

Postdoc Fellow at The molecular foundry, LBNL, Berkeley, CA Aug. 2007 - Present
Independent reviewer for *Soft Matter*, and *the Journal of Material Chemistry*
Research Assistant at the University of Massachusetts-Amherst, Amherst, MA 2003 - 2007
Teaching Assistant, Organic Chemistry 261 at the University of Massachusetts-Amherst, Amherst, MA Jan.-
May. 2004
Teaching Assistant, General Chemistry Laboratory 111 and 112 at the University of Massachusetts-
Amherst, Amherst, MA 2002-2003
Teaching Assistant, Physical Chemistry Laboratory at Nanjing University, China 2000-2001

Awards and Honors

Selected as 2006-2007 University Outstanding Graduate Student Fellowship (one awarded per department),
the University of Massachusetts, Amherst
Named as a 2006 Invitrogen Fellow (Gordon Conference, Macromolecular Organization & Cell Function)
Chosen to present at the first annual NIH National Outstanding Graduate Student Research Festival (One of
only 250 senior graduate students selected across the U.S.) Aug. 2006
Awarded the 2006 William E. McEwen Outstanding Chemistry Graduate Student Award

Professional Affiliation

Full membership in Sigma Xi, The Scientific Research Society
Member of the Materials Research Society
Member of the American Association for the Advancement of Science (AAAS)
Member of the American Chemical Society since 2002.
Former Member of the Chemistry-Biology Interface Training Program (CBI)
the University of Massachusetts Amherst.



Publications:

The Molecular Foundry, LBNL:

30. **Wu, S.**, **Han, G.**; (Co-first Authorship) Milliron, D.J.; Aloni, S.; Altoe, V.; Talapin, D.V.; Cohen, B. E.; and Schuck, P.J. "Non-blinking and photostable upconverted luminescence from single lanthanide-doped nanocrystals. *Proceedings of the National Academy of Sciences of the United States of America*, **2009**, 106(27), 10917- 10921, (reported in *MRS Bulletin*, **34(8) 557, August 2009 and LBNL news**)
29. **Han, G.**; Ajo-Franklin, C.; Mokari, T.; Cohen, B.E. "Caged Quantum dots" *Journal of the American Chemical Society*, 2008, 130 (47), 15811–15813, (reported in *Chemical & Engineering News*, **86(46), November 17, 2008**)
28. Chan, E. M.; Xu, C.; Mao, A.; **Han, G.**; Owen, J.S.; Cohen, B.E.; and Milliron, D.J. "Reproducible, High-Throughput Synthesis of Colloidal Nanocrystals for Optimization in Multidimensional Parameter Space." *Nano letters* In Press
27. Liang, X.; Chen, T.; Jung, Y.; Miyamoto, Y.; **Han, G.**; Cabrini, S.; Ma B.; and Olynick O.L. "Nanoimprint-Induced Molecular Stacking and Pattern Stabilization in a Solution-Processed Subphthalocyanine Film" *ACS Nano* In Press

University of Massachusetts-Amherst:

26. Kim, B.; **Han, G.**; Toley, B. J.; Kim, C.-K.; Rotello, V. M.; Forbes, N. S. "Tuning payload delivery in tumour cylindroids using gold nanoparticles." *Nature Nanotechnology*. In Press
25. Jordan, B. J.; Hong, R.; **Han, G.**; Rana, S.; Rotello, V. M. "Modulation of enzyme–substrate selectivity using tetraethylene glycol functionalized gold nanoparticles" *Nanotechnology*, **2009**, 20, 434004.
24. Ghosh, P. S.; Kim, C.-K.; **Han, G.**; Forbes, N. S.; Rotello, V. M. "Efficient Gene Delivery Vectors by Tuning the Surface Charge Density of Amino Acid- Functionalized Gold Nanoparticles" *ACS Nano*, **2008**, 2(11)2213..
23. Chompoosor, A.; **Han, G.**; Rotello, V. M. "Charge Dependence of Ligand Release and Monolayer Stability of Gold Nanoparticles by Biogenic Thiols" *Bioconjugate Chem.*, **2008**, 19, 1342-1345.
22. Ghosh, P.; **Han, G.**; De, M; Rotello, VM ."Gold nanoparticles in delivery applications." *Advanced drug delivery reviews* **2008**, 60(11) 1307-1315.
21. **Han, G.**; Ghosh, P; Rotello, VM. "Multi-functional gold nanoparticles for drug delivery" *Bio-applications of nanoparticles* **2007**,: 620, 48-56
20. Ghosh, PS.; **Han, G.**; Erdogan B.; Rotello, VM. "Binding of nanoparticle receptors to peptide alpha-helices using amino acid-functionalized nanoparticles" *Journal of peptide science* **2008**, 14(2) 134-138
19. Leroueil, P ; Berry, SA.; Duthie, K.; **Han, G.**; Rotello, VM.; McNerny, DQ.; Baker, JR. Jr., Orr, BG.; and Banaszak Holl, MM. "Wide varieties of cationic nanoparticles induce defects in supported lipid bilayers" *Nano letters* **2008** , 8(2) 420-424
18. **Han, G.**, Ghosh, P.; De, M, Rotello V. M. "Drug and gene delivery using gold nanoparticles ." *NanoBioTechnology* **2007**, 3(1)1551.
17. Ghosh, PS.; **Han, G.**; Erdogan B.; Rotello, VM. "Nanoparticles featuring amino acid-functionalized side chains as DNA receptors" *Chemical Biology & Drug Design* **2007**, 70 (1) 13-18.
16. **Book Chapter: Han, G.**, Ghosh, P.; Rotello V. M. "Multi-Functional gold nanoparticles for drug delivery." In the book " Bio-applications of nanoparticles" edited by Dr. Warren Chan.
15. Srivastava, S.; Samanta, B.; Arumugam, p.; **Han, G.** Rotello, V. M. "Influence of DNA on Spacing and Magnetic Properties of Iron Platinum (Fe-Pt) Nanoparticles" *Journal of Material chemistry*. **2007**, 17(1) 52-55.
14. **Han, G.**, Ghosh, P.; Rotello V. M. "Functionalized gold nanoparticles for drug delivery." *Nanomedicine* **2007**, 2(1) 113-123.



13. Nakade, H.; Jordan, B.J.; Xu, H.; **Han, G.**; Srivastava, S.; Arvizo, R.R.; Rotello, V.M. "Supramolecular Chirality Induction: Discrete Self-Assembly of Specific Hydrogen Bonding Dyad" *Journal of the American Chemical Society* **2006**, 128 (46), 14924-14929.
12. Vanderpujje, B.; **Han, G.**; Rotello, V.M.; Vachet, R.W. "Mixed Monolayer-Protected Gold Nanoclusters as Selective Peptide Extraction Agents for MALDI-MS Analysis" *Analytical Chemistry* **2006**, 78 (15), 5491-5496
11. Goodman, C.M.; Chari, N.S.; **Han, G.**; Hong R.; Ghosh, P.; Rotello, V.M. "DNA-binding by Functionalized Gold Nanoparticles: Mechanism and Structural Requirements" *Chemical Biology and Drug Design*, **2006**, 67 (4), 297-304.
10. **Han, G.**; You, C.-C.; Kim, B.J.; Turingan, R.S; Forbes, N.S.; Martin, C.T.; Rotello, V.M. "Light-Regulated Release of DNA and Its Delivery to Nuclei by Means of Photolabile Gold Nanoparticles." *Angewandte Chemie International Edition*, **2006**, 45 (19), 3165-3169. **(reported by NCI and Nature Materials)**
http://nano.cancer.gov/news_center/nanotech_news_2006-04-17a.asp;
<http://www.nature.com/materials/nanozone/news/060511/portal/m060511-2.html>
9. **Han, G.**; Martin, C.T.; Rotello, V.M. "Stability of gold nanoparticle-bound DNA toward biological, physical, and chemical agents." *Chemical Biology and Drug Design*, **2006**, 67 (1), 78-82. **(Editor's highlights)**
8. Hong, R; **Han, G.**; Fernandez, J.M.; Kim, B.J.; Forbes, N.S.; Rotello, V.M. "Glutathione-mediated delivery and release using monolayer protected nanoparticle carriers." *Journal of the American Chemical Society*, **2006**, 128 (4), 1078-1079.
7. **Han, G.**; Chari, N.S.; Verma, A.; Hong, R.; Martin, C.T.; Rotello, V.M. "Controlled recovery of the transcription of nanoparticle-bound DNA by intracellular concentrations of glutathione." *Bioconjugate Chemistry*, **2005**, 16 (6), 1356-1359. **(#16 Most-Accessed Articles: October-December, 2005)**
http://pubs3.acs.org/journals/bcches/promo/most/most_accessed/2005q4.html
6. You, C.-C.; De, M.; Han, G.; Rotello, V.M. "Tunable inhibition and denaturation of alpha-chymotrypsin with amino acid-functionalized gold nanoparticles." *Journal of the American Chemical Society*, **2005**, 127(37), 12873-12881.

Nanjing University:

5. Chen, G.; Ou, S.J.; Bai, Z.P.; **Han, G.**; Duan, C.Y. "Synthesis, crystal structure and electrochemistry of biferrocene palladium complex" *Chinese Journal of Inorganic Chemistry*, **2003**, 19 (5): 501-505.
4. **Han, G.**; Guo, D.; Duan, C.Y.; Mo, H Meng, Q.J. "Self-assembly of a novel mixed-valence tetranuclear molecular square [(Fe₃FeL₂)-Fe-II-L-III(HL)(2)](3+) and [M(HL)](4)(4+) squares (M = Ni, Zn and Cd) {H₂L = bis(2-acetylpyridine) thiocarbazono}" *New Journal of Chemistry*, **2002**, 26 (10): 1371-1377.
3. Guo, D.; **Han, G.**; Duan, C.Y., Pang, K.L.; Meng, Q.J. "Novel ferrocene-containing helical triangular macrocycle achieved via an exchange reaction" *Chemical Communications*, **2002**, 10, 1096-1097.
2. Fang, C.J.; Duan, C.Y.; He, C; **Han, G.**; Meng, Q.J. "A supramolecular analog of cyclohexane sustained by aromatic C-H center dot center dot center dot pi interactions between ferrocene moieties: molecular packing of ferrocene-containing thiosemicarbazato metal complexes" *New Journal of Chemistry*, **2000**, 24 (9): 697-701.
1. Fang, C.J.; **Han, G.**; Liu, Y.J.; Duan, C.Y.; Meng, Q.J. "Acetylferrocene thiosemicarbazone" *Acta Crystallographica Section C-Crystal Structure Communications*, **1999**, 55,2058-2060.

Presentations:

- 16.Mar. 2010, **Oral Presentation**, American Chemical San Francisco, CA
15. Nov. 2009, **Oral Presentation**, Materials Research Society, Boston, MA



14. Nov. 11, 2008, **Oral Presentation**, Molecular Foundry (TMF) & the National Center for Electron Microscopy (NCEM) users' meeting at Lawrence Berkeley National Laboratory
13. March 2007, **Poster Presentation**, American Chemical Society, Chicago, IL. "Charge effects on gold nanoparticle-based drug delivery" **Han, G.**; Kim, B.J.; Forbes, N.S.; Martin, C.T.; Rotello, V.M in Colloid Division.
12. March, 2007, **Oral Presentation**, American Chemical Society, Chicago, IL. "DNA/Drug delivery into cells using multifunctional gold nanoparticles" **Han, G.**; Chompoosor, A.; Kim, B.J.; Forbes, N.S.; Martin, C.T.; Rotello, V.M in Colloid Division.
11. November, 2006 Poster Presentation in National Nano Engineering Conference (NNEC) at Boston .
10. October, 2006 Poster Presentation in NIH Campus , Bethesda, MD. USA (First Annual National Graduate Research Festival)
9. September, 2006 Poster Presentation in Center for Hierarchical Manufacturing (CHM) UMass-Amherst.
8. September, 2006: Oral Presentation in 16th Annual Research Symposium, Chemistry department, UMass-Amherst
7. August, 2006: poster presentation in Gordon Conference, Macromolecular Organization & Cell Function.
6. March, 2006: American Chemical Society, Atlanta, GA. "Light-regulated DNA transcription and delivery using photolabile gold nanoparticles." **Han, G.**; You, C.-C; Kim, B.J.; Forbes, N.S.; Martin, C.T.; Rotello, V.M. **Oral** presentation in Organic Division.
5. March, 2006: American Chemical Society, Atlanta, GA. "Glutathione-mediated drug release using monolayer protected nanoparticle carriers." **Han, G.**; Hong, R.; Fernandez, J.; Kim, B.J.; Forbes, N.S.; Martin, C.T.; Rotello, V.M. **Poster** presentation in Division of Colloid and Surface Chemistry.
4. March, 2006: The Molecular & Cellular Biology Program (MCB) at UMass, Amherst Retreat "DNA recognition and delivery using functional gold nanoparticles" **Han, G.**; Martin, C.T.; Rotello, V.M. **Poster** presentation.
3. August, 2005: American Chemical Society, Washington, D.C." DNA recognition and delivery using nanoparticle scaffolds." **Han, G.**; Erdogan, B.; Goodman, C.M.; Sandhu, K.K.; Martin, C.T.; Rotello, V.M. **Poster** presentation in Organic Division.
2. January, 2005: Chalk talk of Chemistry-Biology Interface Training Program (CBI) University of Massachusetts Amherst. **Oral** presentation.
1. May, 2004: Researchfest of chemistry department , University of Massachusetts Amherst. ." DNA binding and delivery using gold nanoparticles." **Han, G.**; Martin, C.T.; Rotello, V.M. **Poster** presentation.

Other co-authored presentations:

4. March, 2006: American Chemical Society, Atlanta, GA. "Superquenching of conjugated polymers by gold nanoparticles and recovery of fluorescence by DNA for sensing applications." Krovi, S.A.; Erdogan, B.; **Han, G.**; Kim, I.B.; Bunz, U.H.F.; Rotello, V.M. **Poster** presentation in Polymer division.
3. March, 2006: American Chemical Society, Atlanta, GA. "DNA sensing using nanoparticle-based receptors." Erdogan, B.; Krovi, S.A.; **Han, G.**; Kim, I.B.; Bunz, U.H.F.; Rotello, V.M. **Oral** presentation in PMSE division.
2. August, 2005: American Chemical Society, Washington, D.C." Tunable inhibition and denaturation of a -chymotrypsin with amino acid-functionalized gold nanoparticles." You, C.C.; De, M.; **Han, G.**; Rotello, V. M.. **Poster** presentation in Organic Division.
1. August, 2005: American Chemical Society, Washington, D.C." Supramolecular helical induction using specific hydrogen bonded dyads." Nakade, H.; Jordan, B.J.; Xu, H.; **Han, G.**; Srivastava, S.; Rotello, V.M. **Poster** presentation in Organic Division.