

## Curriculum Vitae

### Naomi J. Halas, D.Sc.

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- DEGREES:** 1987 Ph.D. (Physics) Bryn Mawr College  
1984 M.A. (Physics) Bryn Mawr College  
1980 B.A. (Chemistry) La Salle College, *magna cum laude*
- POSITIONS:** 2015 – present Director, Smalley-Curl Institute  
2015 Director, Smalley Institute  
2010 – 2015 Director, Rice Quantum Institute  
2009 – 2014 Senior Visiting Professor, Institute of Physics, Chinese Academy of Sciences  
2009 – present Professor, Department of Physics and Astronomy, Rice University  
2006 – present Professor, Department of Biomedical Engineering, Rice University  
2004 – present Director, Laboratory for Nanophotonics, Rice University  
2001 – present Stanley C. Moore Professor in Electrical and Computer Engineering, Rice University  
1999 – present Professor, Department of Chemistry, Rice University  
1999 – 2001 Professor, Department of Electrical and Computer Engineering, Rice University  
1994 – 1999 Associate Professor, Rice University  
1989 – 1994 Assistant Professor, Rice University  
1987 – 1989 Postdoctoral Associate, AT&T Bell Laboratories  
1983 – 1986 Graduate Research Fellow, IBM T.J. Watson Research Center, Yorktown, NY
- HONORS AND AWARDS:** 2017 Lewis Lecturer, Chemistry Department, University of Cambridge  
2017 Willis E. Lamb Award  
2016 C. N. Yang Professorship, Hong Kong University  
2016 Member, National Academy of Inventors  
2016 Inductee, Bethel Park High School Great Alumni Hall of Fame  
2015 R. W. Wood Prize, Optical Society of America  
2015 Highly Cited Researcher, Thompson-Reuters (Chemistry and Physics)  
2014 Highly Cited Researcher, Thompson-Reuters  
2014 Member, National Academy of Engineering  
2014 Outstanding woman in Science, AWIS Gulf Coast-Houston Chapter  
2014 SPIE Biophotonics Technology Innovator Award  
2014 Frank Isakson Prize for Optical Effects in Solids, American Physical Society  
2013 Women in Science Honoree, BioHouston  
2013 Member, National Academy of Sciences  
2013 Fellow, Materials Research Society  
2012 Doctor of Science *honoris causa*, University of Victoria, Canada  
2012 Alexander M. Cruickshank Award, Gordon Research Conferences  
2011 Top 100 chemists of the decade by impact, 2000-2010 (Thomson-Reuters)  
2010 Inventor of the Year, State Bar of Texas (with J. West)  
2010 R. E. Tressler Award, Materials Science and Engineering, Penn State University  
2009 Member, American Academy of Arts and Sciences  
2009 DoD National Security Science and Engineering Faculty Fellow  
2008 NBIC Research Excellence Award, (University of Pennsylvania)  
2008 Fellow, IEEE- Institute of Electrical and Electronics Engineers  
2007 Doctor of Science *honoris causa*, La Salle University  
2007 Fellow, SPIE-The International Society for Optical Engineering  
2006 *Esquire's* Best and Brightest, December 2006

2006 Nanotech Brief's Nano 50 Innovator Award  
 2005 Fellow, American Association for the Advancement of Science  
 2005 Woman of Achievement, YWCA Houston  
 2004 Small Times Magazine's Best Researcher of 2004; finalist  
 2004 Nanotechnology Now's "Best Discovery of 2003"  
 2004 Senior Member, IEEE  
 2003 Fellow, Optical Society of America  
 2003 Breast Cancer Research Program Innovator Award, U. S. Army Medical Research and Materiel Command, Congressionally Funded Medical Research Programs, Department of Defense  
 2001 Fellow, American Physical Society  
 1992 National Science Foundation Young Investigator Award  
 1991 Amoco Outstanding Young Faculty Award

**MISSION STATEMENT:** To create new nanoscale objects that perform a function...to understand the physical properties of those objects, both at the microscopic and macroscopic level...to incorporate them into unique applications of societal and technological impact.

**RESEARCH:** Design and fabrication of optically responsive nanostructures, nanophotonics, plasmonics

**COURSES TAUGHT:** Nano- and Microphotonics Graduate Seminar  
 Physics of Reduced Dimensionality Structures Graduate Seminar  
 Scanning Probe Microscopy Graduate Seminar  
 Fundamentals of Nonlinear Optics  
 Lasers and Quantum Electronics  
 Topics in Nonlinear and Ultrafast Optics Graduate Seminar  
 Quantum Mechanics for Engineers  
 Solid State Physics for Engineers  
 Electronic Materials for Engineers

**PATENTS:** *Metal Nanoshells* 6,344,272, and 6,685,986 with Stephen J. Oldenburg, and Richard D. Averitt

*Temperature-Sensitive Polymer/Nanoshell Composites for Photothermally Modulated Drug Delivery* 6,428,811 and 6,645,517 with Jennifer L. West, Scott R. Sershen, Steven J. Oldenburg, and Richard D. Averitt.

*Optically-active nanoparticles for use in therapeutic and diagnostic methods*, 6,530,944 with Jennifer L. West and Leon Hirsch

*Partial Coverage metal nanoshells and method of making same*, 6,660,381 with Robert K. Bradley

*Optically-absorbing nanoparticles for enhanced tissue repair* 6,685,730 with Jennifer West, Rebekah Drezek, and Scott Sershen

*Metal Nanoshells for biosensing applications*, 6,699,724 with Jennifer West, Steve Oldenburg and Richard D. Averitt

*Nanoparticle-based all-optical sensors*, 6,778,316 with Surbhi Lal, Peter Nordlander, Joseph Jackson, and Cristin Moran

*Multi-layer nanoshells comprising a metallic or conducting shell*, 7,144,627 with Corey J. Radloff

*Fluorinated Nanodiamond as a precursor for solid substrate surface coating using wet chemistry*, 7,858,186, with Yu Liu and Valery Khabaschescu

*Nanorice particles: hybrid plasmonic nanostructures*, 7,790,066 with Hui Wang, Daniel Brandl, Fei Le, and Peter Nordlander

*Methods for producing submicron metal line and island arrays*, 6,875,475 with Moran; Cristin E. , Radloff; Corey J.

*Method for scalable production of nanoshells using salt assisted purification of intermediate colloid-seeded nanoparticles*, 6,908,496 with Bradley; Robert Kelley

*Use of metal nanoshells to impede the photo-oxidation of conjugated polymer*, 6,852,252 with Hale; Gregory David

*Nanoparticle comprising nanoshell of thickness less than the bulk electron mean free path of the shell material*, 7,371,457 with Oldenburg, S. J.; and Averitt, R. D.

*Nonconcentric Nanoshells with offset core in relation to shell and method of using the same*, 8,178,202 with Wang, Hui; Nordlander, P. J.; Wu, Yanpeng

*Multimetallic nanoshells for monitoring chemical reactions*, 8,605,280 with Heck, Kimberly Nadia and Wong, Michael Sha-Nang

*Waste Remediation*, 9,222,665 with Peter Nordlander and Oara Neumann

**MEMBERSHIPS:** American Chemical Society (ACS)  
American Physical Society (APS)  
Institute of Electrical and Electronics Engineers (IEEE)  
Optical Society of America (OSA)  
International Society for Optical Engineering (SPIE)  
Materials Research Society (MRS)  
American Association for the Advancement of Science (AAAS)

**ACTIVITIES:**

- Board member, TAMEST (The Academy of Medicine, Engineering, Science of Texas) 2015-2016
- Academic Advisory Committee, Research Center of Applied Sciences (RCAS), Academia Sinica, Taiwan, 2014-6
- International Advisory Committee, NFO-13, Park City, UT, 2014
- Member, Rice University Promotion and Tenure Committee, 2014 (appointed by Provost)
- Member, Rice University Dean of Natural Sciences Search Committee, 2014
- Member of Advisory Board, DARPA Defense Sciences Office, 2014
- Editorial Board, Materials Horizons, 2013-
- Advisory Editorial Board, Chemical Physics Letters, 2012-
- Director-at-Large, Optical Society of America, 2011-2013
- Organizing Committee member, NFO-12, San Sebastian, Spain, 2012
- Chair, MPSAC Subcommittee on Interdisciplinary Programs, National Science Foundation 2011-
- Member, Mathematical and Physical Sciences Advisory Committee (MPSAC), National Science Foundation 2010-
- Chair, Gordon Research Conference on Plasmonics, 2010
- Member, Scientific Advisory Board, Institute for Microelectronics, Singapore, 2009-11
- Member, Scientific Advisory Committee, Center for Integrated Nanotechnologies, LANL and Sandia National Laboratories, 2009-
- Integration Panel, Peer Reviewed Cancer Research Program of the Department of Defense, 2009
- Associate Editor, Nano Letters 2009-
- Member of the Editorial Advisory Board, Laser and Photonics Reviews 2009-
- Member of the Nanophotonics Program Committee, IQEC 2009
- Co-Chair, Gordon Research Conference on Plasmonics, 2008
- Member of Editorial Advisory Board, Nano Letters 2006-2008

- Member, Keck Center for Gene Therapy, U. T. M. D. Anderson Cancer Center, Houston, TX
- Member of Scientific Review Board, Los Alamos National Laboratory, Materials Science and Technology Division
- Member of Visiting Advisory Board, Materials Research Science and Engineering Center, Pennsylvania State University
- Member, NRC Committee on Nanophotonics Accessibility and Applicability
- Founding member, Nanospectra Biosciences, Inc.
- Member of multiple Program Committees, SPIE Conferences on Plasmonics and Applications in Biomedicine, 2002-2008
- Chair of Organizing Committee, SPIE Conference on Plasmonics, 2002-2005
- Member, NSF Site visit Review Committees, NSEC (Harvard, Northwestern U, UCLA) 2003
- Symposium Organizer for “Synthesis, Spectroscopy, Characterization and Application of Nanoparticles”, Division of Physical Chemistry, ACS Annual Meeting, March 2003
- Symposium Organizer for “Nanoparticles: Disks, Rods and Complex Shapes”, APS Annual Meeting, March 2003
- Symposium Organizer, Reduced Symmetry Nanostructures, Materials Research Society Meeting, November 2003.
- Member, Site visit Review Committee for NSF Nanobiotechnology Science and Technology Center (Cornell U.) , September 2002
- Member of Program Committee, SPIE Conference on Bio-MEMS and Smart Nanostructures, Adelaide Australia, December 2001
- Member of the Executive Committee, American Physical Society Division of Laser Science, 1996-1998
- Member of the Executive Committee, American Physical Society Texas Section, 1996-1998
- APS Division of Laser Science, Chair, Undergraduate Summer Research Grants Awards Committee, 1996-1998
- APS Laser Science Topical Group, Student Travel Grant Awards Committee, 1993-96
- DLS Representative to the APS March Meeting Symposia Selection Committee, 1998
- ILS-XV Conference Sessioning Committee Member, 1999
- NSF Graduate Fellowship Evaluation Committee, Physics and Astronomy, 1996
- External Review Panel Interviewee, Texas Advanced Technology Program, 1994
- NSF Review Panels, 1992-2000 (more than 20)
- Reviewer for: Optics Letters, Optics Communications, Optics Express, Applied Physics Letters, Journal of Chemical Physics, Physical Review Letters, Langmuir, Journal of Physical Chemistry B, Nano Letters, Nature Materials, Science, Advanced Materials, Journal of Biomedical Optics, Journal of the American Chemical Society, Proceedings of the National Academy of Sciences, Nature, Nature Nanotechnology, Nature Photonics

## BIBLIOGRAPHY:

**Refereed Journal Articles** (>40,000 citations, H=101 Web of Science; >55,000 citations, H=118 Google Scholar):

1. N. J. Halas, S.-N. Liu, and N. B. Abraham, “Route to mode locking in a three-mode He-Ne 3.39 micron laser including chaos in the secondary beat frequency”, *Physical Review A* **28**, 2915-2920 (1983).
2. M.B. Ketchen, D. Grischkowsky, T.C. Chen, C-C. Chi, I.N. Duling III, N.J. Halas, J-M. Halbout, J.A. Kash, and G.P. Li, “Generation of Subpicosecond Electrical Pulses on Coplanar Transmission Lines”, *Applied Physics Letters* **48**, 751-753 (1986).
3. N.J. Halas and D. Grischkowsky, “Simultaneous Optical Pulse Compression and Wing Reduction”, *Applied Physics Letters* **48**, 823-825 (1986).
4. W .J. Gallagher, C-C. Chi, I.N. Duling, III, D. Grischkowsky, N .J. Halas, M.B. Ketchen, and A.W. Kleinsasser, “Subpicosecond Optoelectronic Study of Resistive and Superconductive Transmission Lines”, *Applied Physics Letters* **50**, 350-352 (1987).
5. N.J. Halas, D. Grischkowsky, and D. Krokell, “An Ultrafast Light Controlled Optical Fiber Modulator”, *Applied Physics Letters* **50**, 886-888 (1987).

6. D. Grischkowsky, M.B. Ketchen, C-C. Chi, I.N. Duling, III, N.J. Halas, J-M. Halbout and P.J. May, "Capacitance-Free Generation and Detection of Subpicosecond Electrical Pulses on Coplanar Transmission Lines", *IEEE Journal of Quantum Electronics* **24**, 221-225, (1988).
7. D. Krokkel, N.J. Halas, D. Grischkowsky, and G. Giuliani, "Dark Pulse Propagation in Optical Fibers", *Physical Review Letters* **60**, 29-32 (1988).
8. N.J. Halas and J. Bokor, "Surface Recombination on the Si(111)2 x 1 Surface", *Physical Review Letters* **62**, 1679-1682 (1989).
9. J. Bokor and N.J. Halas, "Time-Resolved Study of Silicon Surface Recombination", *IEEE Journal of Quantum Electronics* **25**, 2550-2555 (1989).
10. R. A. Cheville, W.B. Haynes and N. J. Halas, "Time-Resolved Reflectivity Studies of GaAs(100)/Oxide and GaAs(100)/ZnSe Interfaces", *Applied Physics Letters* **59**, 1476-1478 (1991).
11. R. A. Cheville and N. J. Halas, "Time-Resolved Carrier Relaxation in Solid C<sub>60</sub> Thin Films", *Physical Review B. Rapid Communications* **45**, 4548-4550 (1992).
12. R. A. Cheville, M. T. Reiten, and N. J. Halas, "Wide-Bandwidth Frequency Doubling with High Conversion Efficiency", *Optics Letters* **17**, 1343-1345 (1992).
13. H. Philips, D. Sarkar, R. Sauerbrey, and N. J. Halas, "Excimer Laser Induced Electrical Conductivity in C<sub>60</sub> Thin Films", *Applied Physics A* **57**, 105-107 (1993).
14. N. J. Halas, "Carrier Dynamics in Solid Fullerenes", in *Ultrafast Spectroscopy of Advanced Electronic and Optoelectronic Materials*, *SPIE Proceedings* **1861**, 333-342 (1993).
15. M. T. Reiten, R. A. Cheville, and N. J. Halas, "Second Harmonic Generation of Ti: Sapphire Laser Radiation", invited article for the IEEE-LEOS newsletter, October 1993.
16. D. Sarkar and N. J. Halas, "Diffusion of Silver into Solid C<sub>60</sub> Thin Films", *Applied Physics Letters* **63**, 2438-2440 (1993).
17. J. A. Dura, P. M. Pippenger, N. J. Halas, X. Z. Xiong, P. C. Chow, and S. C. Moss, "Epitaxial Integration of Single Crystal C<sub>60</sub>", *Applied Physics Letters* **63**, 3443-3445 (1993).
18. D. Sarkar and N. J. Halas, "Dember Effect in C<sub>60</sub> Thin Films", *Solid State Communications* **90**, 261-265 (1994).
19. J. Resh, D. Sarkar, J. Kulik, J. Brueck, A. Ignatiev, and N. J. Halas, "Scanning Tunneling Microscopy and Spectroscopy with Fullerene Coated Tips", *Surface Science* **316**, L1061-L1067 (1994).
20. R. D. Averitt, J. M. Alford, and N. J. Halas, "High-Purity Vapor Phase Purification of C<sub>60</sub>", *Applied Physics Letters* **65**, 374-376 (1994).
21. M. T. Reiten, R. A. Cheville, and N. J. Halas, "Broad Bandwidth Frequency Doubling and Harmonic Generation of Ti: Sapphire Laser Pulses," *SPIE Proceedings* **2116**, 25-34 (1994).
22. R. A. Cheville, R. D. Averitt, and N. J. Halas, "Ultrafast Large Dynamic Range Spectroscopy", *Optics Communications* **110**, 327-333 (1994).
23. M. T. Reiten, R. A. Cheville, and N. J. Halas, "Phase Matching and Focussing Effects in Noncollinear Sum Frequency Mixing in the Near VUV Region", *Optics Communications* **110**, 645-650 (1994).
24. N. J. Halas, V. Papayan, R. D. Averitt, P. Pippenger, and R. A. Cheville, "Solvent Free High Purity Solid C<sub>60</sub>: Optical Properties", *Journal of Molecular Crystals and Liquid Crystals* **256**, 225-232 (1994).
25. R. D. Averitt, P. M. Pippenger, J. A. Dura, V. O. Papayan, P. J. Nordlander, and N. J. Halas, "Photoluminescence Spectra of Epitaxial Single Crystal C<sub>60</sub>", *Chemical Physics Letters* **242**, 592-597 (1995).
26. T. Etheridge, R. D. Averitt, N. J. Halas, B. R. Weisman, "C<sub>60</sub> Triplet Lifetimes: Vibrational Energy Dependence from 0 to 10 eV", *Journal of Physical Chemistry* **99**, 11306-11308 (1995).
27. N. J. Halas, P. M. Pippenger, R. D. Averitt, V. O. Papayan, J. A. Dura, and P. J. Nordlander, "Photoluminescence Spectra of Epitaxial Single Crystal C<sub>60</sub>: an Excimer Model", *SPIE Proceedings* **2530**, 30-40 (1995).
28. P. M. Pippenger, R. D. Averitt, V. O. Papayan, J. A. Dura, P. J. Nordlander and N. J. Halas, "An Excimer Model for Photoluminescence in Single Crystal C<sub>60</sub>", *Journal of Physical Chemistry* **100**, 2854-2861 (1996).
29. K. F. Kelly, D. Sarkar, S. Prato, J. Resh, G. Hale, and N. J. Halas, "Direct Observation of Fullerene-Adsorbed Tips by STM", *Journal of Vacuum Science and Technology B* **14**, 593-596 (1996).
30. K. F. Kelly, G. Hale, D. Sarkar, and N. J. Halas, "Threefold Electron Scattering on Graphite Observed with C<sub>60</sub> Adsorbed STM Tips", *Science* **273**, 1371-1373 (1996).
31. K. F. Kelly, D. Sarkar, S. J. Oldenburg, G. D. Hale, and N. J. Halas, "Fullerene Tips for Scanning Probe Microscopy", *SPIE Proceedings* **2854**, 114-121 (1996).
32. K. F. Kelly, D. Sarkar, S. J. Oldenburg, G. D. Hale, and N. J. Halas, "Fullerene Functionalized Scanning Tunneling Microscope Tips-Preparation, Characterization and Applications", *Synthetic Metals* **86**, 2407-2410 (1997).

33. G. D. Hale, S. J. Oldenburg and N. J. Halas, "Observation of Triplet Exciton Dynamics in Conjugated Polymer Films Using Two-photon Photoemission", *Physical Review B: Rapid Communications* **55**, 16069-16071 (1997).
34. R. D. Averitt, D. Sarkar and N. J. Halas, "Plasmon Resonance Shifts of Au Coated Au<sub>2</sub>S Nanoshells: Insight into Multicomponent Nanoparticle Growth", *Physical Review Letters* **78**, 4217-4220 (1997).
35. D. Sarkar and N. J. Halas, "A General Vector Basis Function Solution of Maxwell's Equations", *Physical Review E* **56**, 1102-1112 (1997).
36. G. D. Hale, S. J. Oldenburg, and N. J. Halas, "Effects of Photo-oxidation on Conjugated Polymer Films", *Applied Physics Letters* **71**, 1483-1485 (1997).
37. S. Oldenburg, R. D. Averitt, S. Westcott, and N. J. Halas, "Nanoengineering of Optical Resonances", *Chemical Physics Letters* **288**, 243-247 (1998).
38. G. D. Hale, S. D. Oldenburg, and N. J. Halas, "Dynamics of Triplet Excitons in MEH-PPV Measured by Two-Photon Photoemission", *SPIE Proceedings* **3145**, 229-240 (1998).
39. K. F. Kelly and N. J. Halas, "Determination of Alpha-site and Beta-site Defects on a Graphite Surface", *Surface Science Letters* **416**, L1085-L1089 (1998).
40. S. Westcott, S. Oldenburg, T. R. Lee, and N. J. Halas, "Formation and Adsorption of Gold Nanoparticle-Cluster on Functionalized Silica Nanoparticle Surfaces", *Langmuir* **14**, 5396-5401 (1998).
41. R. D. Averitt, S. L. Westcott and N. J. Halas, "Ultrafast Electron Dynamics in Gold Nanoshells", *Phys. Rev. B.* **58**, 10203-10206 (1998).
42. L. A. Porter, D. Ji, S. L. Westcott, M. Graupe, R. S. Czernuszewicz, N. J. Halas, and T. R. Lee, "Gold and Silver Nanoparticles Functionalized by the Adsorption of Dialkyl Disulfides", *Langmuir* **14**, 7378-7380 (1998).
43. S. L. Westcott, S. J. Oldenburg, T. R. Lee and N. J. Halas, "Construction of Simple Gold Nanoparticle Aggregates with Controlled Plasmon-Plasmon Interactions", *Chemical Physics Letters* **300**, 651-653 (1999).
44. J. G. Kushmerick, K. F. Kelly, H. P. Rust, N. J. Halas, and P. S. Weiss, "Observations of Anisotropic Electron Scattering on Graphite with a Low Temperature Scanning Tunneling Microscope", *Journal of Physical Chemistry B* **103**, 1619-1623 (1999).
45. D. B. Wolfe, S. J. Oldenburg, S. L. Westcott, Joseph B. Jackson, Mark S. Paley, and N. J. Halas, "Photodeposition of Molecular Layers onto Nanoparticle Substrates", *Langmuir* **15**, 2745-2748 (1999).
46. D. B. Wolfe, S. J. Oldenburg, S. L. Westcott, J. B. Jackson, M. S. Paley, N. J. Halas, "Preparation and Characterization of Polymer Coated Nanoparticles", *SPIE Proceedings* **3793**, 129-137 (1999).
47. Y. S. Shon, K. F. Kelly, N. J. Halas, and T. R. Lee, "Fullerene-terminated Alkanethiolate SAMs on Gold Generated from Unsymmetrical Disulfides", *Langmuir* **15**, 5329-5332 (1999).
48. S. J. Oldenburg, S. L. Westcott, R. D. Averitt, and N. J. Halas, "Surface Enhanced Raman Scattering in the Near Infrared using Metal Nanoshell Substrates", *Journal of Chemical Physics* **111**, 4729-4732 (1999).
49. S. J. Oldenburg, G. D. Hale, J. B. Jackson, and N. J. Halas, "Light Scattering from Dipole and Quadrupole Nanoshell Antennas", *Applied Physics Letters* **75**, 1063-1065 (1999).
50. R. D. Averitt, S. L. Westcott, and N. J. Halas, "The Linear Optical Properties of Gold Nanoshells", *Journal of the Optical Society of America B* **16**, 1824-1832 (1999).
51. R. D. Averitt, S. L. Westcott, and N. J. Halas, "The Ultrafast Optical Properties of Gold Nanoshells", *Journal of the Optical Society of America B* **16**, 1814-1823 (1999).
52. K. F. Kelly, Y. S. Shon, T. R. Lee, and N. J. Halas, "Scanning Tunneling Microscopy and Spectroscopy of Dialkyl Disulfide Fullerenes Inserted into Alkanethiol SAMs," *Journal of Physical Chemistry B* **103**, 8639-8642 (1999).
53. W. T. Chiang, K. F. Kelly, C. Radloff, R. H. Hauge, E. T. Mickelson, J. L. Margrave, X. Wang, G. E. Scuseria, and N. J. Halas, "STM Images of Sidewall Fluorinated SWNTs", *Chemical Physics Letters* **313**, 445-450 (1999).
54. Steven J. Oldenburg, Joseph B. Jackson, Sarah L. Westcott, and N. J. Halas, "Infrared Extinction Properties of Gold Nanoshells", *Applied Physics Letters* **75**, 2897-2899 (1999).
55. J. West and N. J. Halas, "Applications of Nanotechnology to Biotechnology", invited article for *Current Opinions in Biotechnology* **5**, 215-217 (2000).
56. Scott Serksen, Sarah Westcott, N. J. Halas, and J. West, "Temperature-Sensitive Polymer-Nanoshell Composite for Photothermally Modulated Drug Delivery", *Journal of Biomedical Materials Research* **51**, 293-298 (2000).
57. K. F. Kelly, E. T. Mickelson, R. H. Hauge, J. L. Margrave, and N. J. Halas, "Nanoscale Imaging of Chemical Interactions: Fluorine on Graphite", *Proceedings of the National Academy of Sciences* **97**, 10318-10321 (2000).
58. D. D. Smith, L. Sibille, R. Cronise, S. Oldenburg, D. Wolfe, and N. J. Halas, "The Effect of Microgravity on the Growth of Silica Nanoparticles", *Langmuir* **16**, 10055-10060 (2000).
59. G. D. Hale, T. R. Lee, J. Jackson and N. J. Halas, "Enhancing the Active Lifetime of Luminescent Semiconducting Polymers via Doping with Metal Nanoshells", *Applied Physics Letters* **78**, 1502-1504 (2000).

60. J. B. Jackson and N. J. Halas, "Silver Nanoshells: Variations in Morphologies and Optical Properties", *Journal of Physical Chemistry B* **105**, 2743-2746 (2001).
61. C. Radloff and N. J. Halas, "Enhanced Thermal Stability of Silica-Encapsulated Metal Nanoshells", *Applied Physics Letters* **79**, 674-676 (2001).
62. S. L. Westcott, R. D. Averitt, J. Wolfgang, P. J. Nordlander, and N. J. Halas, "Adsorbate-Induced Quenching of Hot Electrons in Gold Core-Shell Nanoparticles", *Journal of Physical Chemistry B* **105**, 9913-9917 (2001).
63. S. Serksen, S. L. Westcott, J. L. West, and N. J. Halas, "An Opto-Mechanical Nanoshell-Polymer Composite", *Applied Physics B* **73**, 379-381 (2001).
64. C. Moran, and N. J. Halas, "Synthesis and Preparation of Silica Nanoparticles with Rare Earth Dopants", *Langmuir* **17**, 8376-8379 (2001).
65. S. L. Westcott, C. Aguirre, K. Bradley, and N. J. Halas, "Electron Relaxation Dynamics in Semicontinuous Metal Films on Nanoparticles", *Chemical Physics Letters* **356**, 207-213 (2002).
66. T. Pham, Joseph B. Jackson, N. J. Halas, and T. R. Lee, "Preparation and Characterization of Gold Nanoshells coated with Self-Assembled Monolayers", *Langmuir* **18**, 4915-4920 (2002).
67. S. Lal, R. N. Taylor, J. B. Jackson, S. L. Westcott, P. J. Nordlander, and N. J. Halas, "Optical Coupling between Gold Nanoshells and a Planar Waveguide Structure", *Journal of Physical Chemistry B* **106**(22), 5609-5612 (2002).
68. S. Serksen, S. L. Westcott, N. J. Halas, and J. L. West, "Independent Optically-addressable Nanoshell-polymer Optomechanical Composites", *Applied Physics Letters* **80**, 4609-4611 (2002).
69. S. L. Westcott and N. J. Halas, "Relative Contributions to the Plasmon Linewidth of Metal Nanoshells", *Physical Review B* **66**, 155431 (2002).
70. C. E. Moran, Jennifer M. Steele, Allen Lee, Carla Aguirre, Corey Radloff, and N. J. Halas, "Soft Lithographic directed growth of wire grating arrays with optical resonances", *SPIE Proceedings* **4810**, 1-6 (2002).
71. Corey Radloff and N. J. Halas, "The decomposition of gold nanoshells in carbon tetrachloride", *SPIE Proceedings*, **4810**, 21-27 (2002).
72. J. B. Jackson and N. J. Halas, "Probing the Optical Near Field of a Nanolens", *SPIE Proceedings*, **4810**, 82-90 (2002).
73. Rebekah Drezek, Jennifer West, and Naomi Halas, "Optical technologies for Functional and Molecular Imaging of the Breast", *Breast Diseases* **14**: 18-20 (2003).
74. E. Prodan, P. Nordlander and N. J. Halas, "Effects of Dielectric Screening on the optical properties of metallic nanoshells", *Chemical Physics Letters* **368** (1-2) 94-101 (2003).
75. J. B. Jackson, L. R. Hirsch, J. L. West, and N. J. Halas, "Controlling the Surface Enhanced Raman Effect on the surface of a core-shell nanoparticle", *Applied Physics Letters* **82**, 257-259 (2003).
76. L. R. Hirsch, J. Jackson, A. Lee, N. J. Halas, and J. L. West, "A whole blood Immunoassay using gold nanoshells", *Analytical Chemistry* **75**, 2377-2381 (2003).
77. C. Moran, C. Radloff and N. J. Halas, "Benchtop fabrication of submicrometer metal line and island arrays using passive microcontact printing and electroless plating", *Advanced Materials* **15** (10).804-806 (2003).
78. C. Charnay, Allen Lee, Shiqing Man, Cristin Moran, Corey Radloff, R. Kelley Bradley and N. J. Halas, "Reduced Symmetry Layered Nanostructures", *Journal of Physical Chemistry B* **107**, 7327-7333 (2003).
79. Jennifer L. West and Naomi J. Halas, "Engineered Nanomaterials for Biophotonics Applications: Improving Sensing, Imaging, and Therapeutics", *Annual Reviews in Biomedical Engineering* **5**, 285-294, (2003).
80. L. R. Hirsch, R. J. Stafford, J. A. Bankson, S. R. Serksen, R. E. Price, J. D. Hazle, N. J. Halas, and J. L. West, "Nanoshell-Mediated Near Infrared Thermal Therapy of Tumors Under MR Guidance", *Proceedings of the National Academy of Sciences* **100**, 13549-13554 (2003).
81. E. Prodan, N. J. Halas, and P. Nordlander, "Electronic structure and optical properties of metal nanoshells", *Nano Letters* **3**, 1411-1415 (2003).
82. E. M. Prodan, C. Radloff, N. J. Halas and P. Nordlander, "A Hybridization Model for the Plasmon Response of Complex Nanostructures", *Science* **302**, 419-422 (2003).
83. J. M. Steele, C. E. Moran, Allen Lee, and N. J. Halas, "Optical Properties of Crossed Metallodielectric Gratings", *SPIE Proceedings* **5221**, 144-150 (2003).
84. Felicia Tam and N. J. Halas, "Nanoshell Dopants in Organic Films: A Simulation Study", *Progress in Organic Coatings* **47** (3-4) 275-278 (2003).
85. J. Steele, C. Moran, C. Aguirre, Allen Lee, and N. J. Halas, "Metallodielectric Gratings with Subwavelength Slots: Optical Properties", *Physical Review B* **68**, 205103 (2003).
86. C. Aguirre, T. Kaspar, C. Radloff, and N. J. Halas, "Surfactant mediated reshaping of metallodielectric nanoparticles", *Nano Letters* **3**, 1707-1711 (2003).

87. Christopher H. Loo, Alex Lin, Leon R. Hirsch, Min-Ho Lee, Jennifer Barton, Naomi J. Halas, Jennifer West, and Rebekah A. Drezek, "Nanoshell-Enabled Photonics-based Imaging and Therapy of Cancer", *Technology in Cancer Research and Treatment* **3**, 33-40 (2004).
88. D. Patrick O'Neal, Leon R. Hirsch, N. J. Halas, J. Donald Payne and J. L. West, "Photothermal Tumor Ablation in mice using near infrared absorbing nanoshells", *Cancer Letters* **209**, 171-176 (2004).
89. C. Aguirre, C. Moran, J. F. Young, and N. J. Halas, "Laser induced reshaping of metallodielectric nanoshells under femtosecond and nanosecond plasmon resonant illumination", *Journal of Physical Chemistry B* **108**(22) 7040-7045 (2004).
90. C. Radloff and N. J. Halas, "Plasmonic Response of Concentric Nanoshells", *Nano Letters* **4**, 1323-1327 (2004).
91. C. E. Moran, J. M. Steele, and N. J. Halas, "Chemical and dielectric modification of the plasmonic bandgap of metallodielectric arrays", *Nano Letters* **4**, 1497-1500 (2004).
92. Felicia Tam, Cristin Moran and N. J. Halas, "Geometrical Parameters Controlling Sensitivity of Nanoshell Surface Plasmon Resonance-based Sensors", *Journal of Physical Chemistry B* **108**, 17290-17294 (2004).
93. N. Grady, N. J. Halas and P. Nordlander, "Influence of Dielectric Function Properties on the Optical Response of Plasmon Resonant Metallic Nanoparticles", *Chemical Physics Letters* **399**, 167-171 (2004).
94. C. Nehl, N. Grady, G. P. Goodrich, F. Tam, N. J. Halas and J. H. Hafner, "Scattering Spectra of Single Au Nanoshells", *Nano Letters* **4**, 2355-2359 (2004).
95. J. B. Jackson and N. J. Halas, "Surface Enhanced Raman Scattering on tunable plasmonic nanoparticle substrates", *Proceedings of the National Academy of Sciences* **101**, 17930-17935 (2004).
96. C. Loo, A. Lowery, N. J. Halas, J. L. West, and R. Drezek, "Immunotargeted Nanoshells for Integrated Cancer Imaging and Therapy", *Nano Letters* **5**, 709-711 (2005).
97. Yu Liu, V. N. Khabashesku and N. J. Halas, "Fluorinated Nanodiamond as a wet chemistry precursor for diamond coatings covalently bonded to glass surface", *Journal of the American Chemical Society* **127**(11): 3712-3713 (2005).
98. C. Loo, L. R. Hirsch, Min-Ho Lee, E. Chang, Jennifer West, Naomi Halas, Rebekah Drezek, "Gold Nanoshell Bioconjugates for Molecular Imaging in Living Cells", *Optics Letters* **30**, 1012-1014 (2005).
99. H. Wang, G. Goodrich, Felicia Tam, Chris Oubre, P. J. Nordlander and N. J. Halas, "Controlled texturing modifies the surface topography and plasmonic properties of Au nanoshells", *Journal of Physical Chemistry B* **109**, 11083-11087 (2005).
100. Scott R. Sershen, Glennys A. Mensing, Marie Ng, Naomi J. Halas, David J. Beebe, and Jennifer L. West, "Independent Optical Control of Microfluidic Valves Formed from Optomechanically-responsive Nanocomposite Hydrogels", *Advanced Materials* **17**, 1366-1368 (2005).
101. Y. N. Xia and N. J. Halas, "Shape-controlled synthesis and surface plasmonic properties of metallic nanostructures", *MRS Bulletin* **30**, 338-344 (2005).
102. Naomi J. Halas, "Playing with Plasmons: Tuning the Optical Resonant Properties of Nanoshells", *MRS Bulletin*, **30**, 362-367 (2005) (invited article).
103. Andre M. Gobin, D. Patrick O'Neal, Naomi J. Halas, Rebekah Drezek, and Jennifer L. West, "Near Infrared Laser Tissue Welding Using Nanoshells as an Exogenous Absorber", *Lasers in Surgery and Medicine* **37**, 123-129 (2005).
104. C. E. Talley, J. B. Jackson, C. Oubre, N. Grady, T. Huser, C. Hollars, S. Lane, P. Nordlander, and N. J. Halas, "Surface Enhanced Raman Scattering from Individual Au Nanoparticles and Nanoparticle Dimer Substrates", *Nano Letters* **5**, 1569-1574 (2005).
105. H. Wang, F. Tam, N. Grady and N. J. Halas, "Cu Nanoshells: effects of interband transitions on the nanoparticle plasmon resonance", *Journal of Physical Chemistry B* **109**, 18218-18222 (2005).
106. F. Le, N. Lwin, J. Steele, M. Käll, N. Halas, and P. Nordlander, "Plasmons in the metallic nanoparticle-film system as a tunable impurity problem", *Nano Letters* **5**, 2009-2013 (2005).
107. H. Wang, Carly S. Levin, and N. J. Halas, "Nanosphere arrays with controlled sub 10 nm gaps as Surface Enhanced Raman spectroscopy substrates", *Journal of the American Chemical Society* **127**, 14992-3 (2005).
108. Alex W. H. Lin, Nastassja A. Lewinski, Jennifer L. West, Naomi J. Halas, and Rebekah A. Drezek, "Optically tunable nanoparticle contrast agents for early cancer detection: model-based analysis of gold nanoshells", *Journal of Biomedical Optics* **10**(6), 064035 (2005).
109. L. R. Hirsch, A. M. Gobin, A. R. Lowery, F. Tam, R. A. Drezek, N. J. Halas, and J. L. West, "Metal Nanoshells", *Annals of Biomedical Engineering* **34**(1), 15-22 (2006).
110. S. Priya Sundararajan, J. M. Steele, and N. J. Halas, "Tunable Ag and Cu surface plasmons on silicon", *Applied Physics Letters* **88**, 063115 (2006).



111. H. Wang, D. Brandl, F. Le, P. Nordlander and N. J. Halas, "NanoRice: a hybrid nanostructure", *Nano Letters* **6**, 827-832 (2006).
112. C. Levin, S. Bishnoi, N. Grady, and N. J. Halas, "Determining the Conformation of thiolated Poly(ethylene Glycol) on Au Nanoshells by Surface Enhanced Raman Spectroscopic Assay", *Analytical Chemistry* **78**, 3277-3281 (2006).
113. H. Wang, Yanpeng Wu, Britt Lassiter, Colleen L. Nehl, Jason H. Hafner, P. J. Nordlander and N. J. Halas, "Symmetry breaking in individual plasmonic nanoparticles", *Proceedings of the National Academy of Sciences*, **103**, 10856-10860 (2006).
114. H. Wang, K. Fu, R. Drezek, and N. J. Halas, "Light Scattering from Spherical Plasmonic Nanoantennas: effects of nanoscale roughness", *Applied Physics B* **84**, 191-196 (2006).
115. S. Bishnoi, C. S. Levin, M. Gheith, B. Johnson, C. Rozell, D. H. Johnson, and N. J. Halas, "An all-optical nanoscale pH meter", *Nano Letters* **6**, 1687-1692 (2006).
116. S. Lal, N. Grady, G. P. Goodrich, and N. J. Halas, "Profiling the near field of a plasmonic nanoparticle with Raman-based molecular rulers", *Nano Letters* **6**, 2338-2343 (2006).
117. J. Cole and N. J. Halas, "Optimized distributions of tunable plasmonic nanoparticles for solar light harvesting applications", *Applied Physics Letters* **89**, 153120 (2006).
118. C. S. Levin, B. Janesko, R. Bardhan, G. Scuseria, J. D. Hartgerink and N. J. Halas, "Chain Length Dependent Vibrational Resonances in Alkanethiol Self-Assembled Monolayers Observed on Plasmonic Nanoparticle Substrates", *Nano Letters* **6**, 2617-2621 (2006).
119. H. Wang and N. J. Halas, "Plasmonic nanoparticle heterodimers fabricated using stepwise upright assembly", *Nano Letters* **6**, 2945-2948 (2006).
120. A. Lowery, A. Gobin, E. S. Day, N. J. Halas, and J. L. West, "Immunonanoshells for targeted photothermal ablation of tumor cells", *International Journal of Nanomedicine*, vol. 1, 149-154 (2006).
121. H. Wang, D. Brandl, P. Nordlander, and N. J. Halas, "Plasmonic Nanoparticles: Artificial Molecules", *Accounts of Chemical Research* **40**, 53-62 (2007).
122. Paolo Fortina, Larry J. Kricka, David J. Graves, Jason Park, Terry Hyslop, Felicia Tam, Naomi J. Halas, Saul Surrey, and Scott A. Waldman, "Applications of nanoparticles to diagnostics and therapeutics in colorectal cancer", *Trends in Biotechnology* **25**, 145-152 (2007).
123. F. Tam, G. P. Goodrich, B. R. Johnson and N. J. Halas, "Plasmonic Enhancement of Molecular Fluorescence", *Nano Letters* **7**, 496-501 (2007).
124. I. Rusakova, T. Oud-Ely, C. Hofmann, D. Prieto-Centurion, C. S. Levin, N. J. Halas, A. Luetge and K. H. Whitmire, "Nanoparticle Shape Conservation in the Conversion of MnO Nanocrosses into Mn<sub>3</sub>O<sub>4</sub>", *Chemistry of Materials* **19**, 1369-1375 (2007).
125. J. Slocik, F. Tam, N. J. Halas, and R. Naik, "Peptide-assembled optically responsive nanoparticle complexes", *Nano Letters* **7**, 1054-1058 (2007).
126. D. Ward, N. K. Grady, C. S. Levin, N. J. Halas, Y. Wu, P. Nordlander, and D. Natelson, "Electromigrated nanoscale gaps for surface-enhanced Raman spectroscopy", *Nano Letters* **7**, 1396-1400 (2007).
127. R. Bardhan, H. Wang, Felicia Tam and N. J. Halas, "Chemically Controlled ZnO Nanoparticle Morphologies with Broadband Visible Light Emissive Properties", *Langmuir* **23**, 5843-5847 (2007).
128. K. Fu, J. T. Sun, A. W. H. Lin, H. Wang, N. J. Halas, and R. A. Drezek, "Polarized angular dependent light scattering properties of bare and PEGylated gold nanoshells", *Current Nanoscience* **3** 167-170 (2007).
129. A. M. Gobin, M. H. Lee, N. J. Halas, William D. James, R. A. Drezek, and J. L. West, "Near-Infrared Resonant Nanoshells for Combined Optical Imaging and Photothermal Cancer Therapy", *Nano Letters* **7**, 1929-1934 (2007).
130. M. Knight, N. Grady, F. Hao, P. Nordlander and N. J. Halas, "Nanoparticle-mediated coupling of light into a nanowire", *Nano Letters* **7**, 2346-2350 (2007).
131. L. A. Nafie, B. Brinson, David Rice, Omar Rahim, Xiaolin Cao, Rina K. Dukor and Naomi J. Halas, "Near Infrared Excited Raman Optical Activity", *Applied Spectroscopy*, **61**, 1103-1106 (2007).
132. H. Wang, J. Kundu and N. J. Halas, "Plasmonic Nanoshell arrays combine surface-enhanced vibrational spectroscopies on a single substrate", *Angewandte Chemie International Edition* **46**, 9040-9044 (2007).
133. S. Link, S. Lal, and N. J. Halas, "Nano-optics from sensing to waveguiding", *Nature Photonics* **1**, 641-648 (2007).
134. F. Le, N. Z. Lwin, N. J. Halas, and P. Nordlander, "Plasmonic interactions between a metallic nanoshell and a thin metallic film", *Phys. Rev. B*, **76**, 165410 (2007).

135. Mi-Ran Choi, Katie J. Stanton-Maxey, C. S. Levin, Rizia Bardhan, Demir Akin, Jennifer Sturgis, J. Paul Robinson, R. Bashir, N. J. Halas, and S. E. Clare, "A cellular Trojan horse for delivery of therapeutic nanoparticles into tumors", *Nano Letters* **7**, 3759-3765 (2007).
136. Felicia Tam, Allen Chen, J. Kundu, Hui Wang, Fei Le, P. J. Nordlander and N. J. Halas, "Mesoscopic Nanoshells: geometry-dependent plasmon resonances beyond the quasistatic limit", *Journal of Chemical Physics*, **127**, 204703 (2007).
137. J. Kundu, F. Le, H. Wang, P. Nordlander and N. J. Halas, "Surface Enhanced Infrared Absorption Spectroscopy (SEIRA) using infrared resonant nanoshell aggregate substrates", *Chemical Physics Letters* **452**, 115-119 (2008).
138. T. H. Park, N. Mirin, J. Lassiter, J. Hafner, N. J. Halas, and P. Nordlander, "Plasmonic properties of Nanoholes", *ACS Nano* **2**, 25-32 (2008).
139. Kun Fu, Jiantang Sun, Lissett R. Bickford, Alex W. H. Lin, Naomi J. Halas, Tse-Kuan Yu, and Rebekah Drezek, "Measurement of immunotargeted plasmonic nanoparticles' cellular binding: a key factor in optimizing diagnostic efficacy", *Nanotechnology* **19**, 045103 (2008).
140. N. Mirin, M. Hainey, Jr., and N. J. Halas, "Controlled loading of nanoparticles into submicron holes", *Advanced Materials* **20**, 535-538 (2008).
141. H. Wang and N. J. Halas, "Mesoscopic Au 'Meatball' Particles", *Advanced Materials* **20**, 820-825 (2008).
142. S. Priya Sundararajan, N. K. Grady, N. Mirin and N. J. Halas, "Nanoparticle-induced enhancement and suppression of photocurrent in a silicon diode", *Nano Letters* **8**, 624-630 (2008).
143. Daniel R. Ward, Naomi J. Halas, Jacob W. Ciszek, James M. Tour, Yanpeng Wu, Peter Nordlander, and Douglas Natelson, "Simultaneous measurements of electronic conduction and Raman response in molecular junctions", *Nano Letters* **8**, 919-924 (2008).
144. A. Barhoumi, O. Neumann, D. Zhang and N. J. Halas, "Surface Enhanced Raman Spectroscopy of DNA", *Journal of the American Chemical Society* **130**, 5523-5529 (2008).
145. F. Le, D. W. Brandl, Y. A. Urzhumov, H. Wang, J. Kundu, N. J. Halas, J. Aizpurua, and P. Nordlander, "Metallic nanoparticle arrays: a common substrate for both SERS and SEIRA", *ACS Nano* **2**, 707-718 (2008).
146. N. J. Halas, "Nanoscience under glass: the versatile chemistry of silica nanostructures", *Perspectives, ACS Nano* **2**, 179-183 (2008).
147. J. B. Lassiter, C. Nehl, J. Hafner, D. Brandl, P. Nordlander, J. Aizpurua, I. Romero, and N. J. Halas, "Close Encounters between two nanoshells", *Nano Letters* **8**, 1212-1218 (2008).
148. S. Lal, N. Grady, J. Kundu, C. S. Levin and N. J. Halas, "Surface Enhanced Spectroscopy with controlled electromagnetic nanoenvironments", invited review article for *Chemical Society Reviews* **37**, 898 – 911 (2008).
149. F. Wei, D. Zhang, N. J. Halas, and J. D. Hartgerink, "Aromatic Amino Acids provide characteristic motifs in the Raman and SERS Spectroscopy of Peptides", *Journal of Physical Chemistry B* **112**, 9158-9164 (2008).
150. D. R. Ward, G. D. Scott, Z. K. Keane, N. J. Halas, J. W. Ciszek, and D. Natelson, "Electronic and Optical Properties of Electromigrated Molecular Junctions", *J. Phys.: Condensed Matter* **20**, 374118 (2008).
151. Rizia Bardhan, Nate K. Grady, and Naomi J. Halas, "Nanoscale control of Near-Infrared Fluorescence Enhancement using Au Nanoshells", *Small* **4**, 1716-1722 (2008).
152. N. Fofang, Tae-Ho Park, P. Nordlander, and N. J. Halas, "Plexcitonic Nanoparticles": Plasmon-exciton hybridization in a nanoshell-J-aggregate complex", *Nano Letters* **8**, 3481-3487 (2008).
153. Mark Knight and N. J. Halas, "Nanoshells to nanoeggs to Nanocups: symmetry breaking beyond the quasistatic limit in complex plasmonic nanoparticles", *New Journal of Physics* **10**, 105006 (2008).
154. Carly S. Levin, Janardan Kundu, Benjamin G. Janesko, Gustavo E. Scuseria, Robert Raphael, and Naomi J. Halas, "Surface Enhanced Raman and Infrared Spectroscopy (SERS and SEIRA) of Ibuprofen Intercalated Hybrid Bilayer Nanoshells", *Journal of Physical Chemistry B* **112**, 14168-14175 (2008).
155. A. Barhoumi, D. Zhang, and N. J. Halas, "Correlation of Molecular Orientation and Packing density in a dsDNA self-assembled monolayer observable with Surface Enhanced Raman Spectroscopy", *Journal of the American Chemical Society* **130**, 14040-1 (2008).
156. D. R. Ward, N. J. Halas, and D. Natelson, "Localized heating in nanoscale Pt constrictions measured using blackbody radiation emission", *Applied Physics Letters* **93**, 213108 (2008).
157. Bruce Brinson, J. Britt Lassiter, Carly S. Levin, Rizia Bardhan, Nikolay Mirin and Naomi J. Halas, "Nanoshells made easy: improving Au layer growth on nanoparticle surfaces", *Langmuir* **24**, 14166-14171 (2008).
158. F. Hao, S. Maier, N. J. Halas, and P. J. Nordlander, "Symmetry breaking in plasmonic nanocavities: subradiant LSPR sensing and a tunable Fano resonance", *Nano Letters* **8**, 3983-3988 (2008).
159. K. Heck, B. Janesko, G. Scuseria, M. S. Wong, and N. J. Halas, "Observing Metal-catalyzed Chemical Reactions *in situ* using Surface enhanced Raman Spectroscopy on Pd-Au Nanoshells", *Journal of the American Chemical Society* **130**, 16592-16600 (2008).

- 160.S. Lal, S. E. Clare and Naomi J. Halas, "Nanoscience-enabled cancer therapy: impending clinical impact", *Accounts of Chemical Research* **41**, 1842-1851 (2008).
- 161.Dongmao Zhang, Hui Wang, Oara Neumann, Aoune Barhoumi, Michael Perham, Jeffrey Hartgerink, Pernilla Wittung-Stafshede and Naomi J. Halas, "Gold nanoparticles can induce the formation of protein-based aggregates at physiological pH", *Nano Letters* **9**, 666-671 (2009).
- 162.Rizia Bardhan, Oara Neumann, N. Mirin, H. Wang, and N. J. Halas, "Au nanorice assemble electrolytically into mesostars", *ACS Nano* **3**, 266-272 (2009).
- 163.N. J. Halas, "Connecting the dots: reinventing optics for nanoscale dimensions", *Proceedings of the National Academy of Sciences*, Vol 106, 3643-3644 (2009).
- 164.R. Bardhan, N. K. Grady, J. Cole, A. Joshi and N. J. Halas, "Fluorescence Enhancement by Au nanostructures: nanorods and nanoshells", *ACS Nano* **3**, 744-752 (2009).
- 165.Nikolay Mirin and N. J. Halas, "Light-bending Nanoparticles", *Nano Letters* **9**, 1255-1259 (2009).
- 166.M. W. Knight, Yanpeng Wu, J. B. Lassiter, Peter J. Nordlander, and N. J. Halas, "Substrates matter: Influence of an adjacent dielectric on the plasmon modes of an individual nanoparticle", *Nano Letters* **9**, 2188-2192 (2009).
- 167.N. J. Halas, "The photonic nanomedicine revolution: let the human side of nanotechnology emerge", *Nanomedicine* (invited editorial) **4**, 369-371 (2009).
- 168.Joseph Cole and N. J. Halas, "Photothermal efficiencies of nanorods and nanoshells", *Journal of Physical Chemistry C*, **113**, 12090-12094 (2009).
- 169.Carly S. Levin, Cristina Hofmann, Tamer A. Ali, Anna T. Kelly, Emilia Morosan, Peter Nordlander, Kenton H. Whitmire, and Naomi J. Halas, "Magnetic-Plasmonic core-shell nanoparticles", *ACS Nano* **3**, 1379-1388 (2009).
- 170.R. Acevedo, R. Lombardini, N. J. Halas, B. R. Johnson, "Plasmonic enhancement of Raman optical activity in molecules near metal nanoshells", *The Journal of Physical Chemistry A*, 13173-13183 (2009).
- 171.J. Kundu, O. Neumann, A. Barhoumi, B. Janesko, G. Scuseria, and N. J. Halas, "SERS and SEIRA of adenine," *Journal of Physical Chemistry C*, **113**, 14390-14397 (2009).
- 172.J. Kundu, C. S. Levin, and N. J. Halas, "Real-time monitoring of lipid transfer between vesicles and hybrid bilayers on Au nanoshells using surface enhanced Raman scattering (SERS)", *Nanoscale* **1**, 114-117 (2009).
- 173.C. S. Levin, J. Kundu, A. Barhoumi, and N. J. Halas, "Nanoshell-based substrates for biomolecular spectroscopic detection", *Analyst* **134**, 1745 - 1750 (2009).
- 174.Aoune Barhoumi, Ryan Huschka, Rizia Bardhan, Mark Knight and N. J. Halas, "Characteristics of light-controlled release of DNA from plasmon resonant nanoparticle vectors", *Chemical Physics Letters* **482**, 171-9 (2009).
- 175.J. B. Lassiter, M. W. Knight, Nikolay A. Mirin and N. J. Halas, "Reshaping the plasmonic properties of an Individual Nanoparticle", *Nano Letters*, **9**, 4326-4332 (2009).
- 176.Rizia Bardhan, Wenxue Chen, Carlos Perez-Torres, Marc Bartels, Ryan M. Huschka, Liang Zhao, Emilia Morosan, Robia Pautler, Amit Joshi, and N. J. Halas, "Nanoshells with targeted simultaneous enhancement of magnetic and optical imaging and photothermal therapeutic response", *Advanced Functional Materials*, **19**, 3901-3909 (2009).
- 177.O. Neumann, F. Tam, D. Zhang, and N. J. Halas, "Label-free, aptamer-based all-optical molecular recognition", *Analytical Chemistry* **81**, 10002-6 (2009).
- 178.M. W. Knight, J. Fan, F. Capasso, and N. J. Halas, "Influence of Excitation and Collection Geometry on the Dark Field Spectra of Individual Plasmonic Nanostructures", *Optics Express*, **18**, pp.2579-2587 (2010).
- 179.Lisa Brown, Heidar Sobhani, J. Britt Lassiter, Peter Nordlander and N. J. Halas, "Heterodimers: plasmonic properties of mismatched nanoparticle pairs", *ACS Nano*, **4**, 819-832 (2010).
- 180.R. Bardhan, S. Mukherjee, N. A. Mirin, S. Levit, P. Nordlander, and N. J. Halas, "Nanosphere in a nanoshell: a simple nanomatryushka", *Journal of Physical Chemistry C* **114**, 7378-7383 (2010).
- 181.N. Grady, M. W. Knight, Rizia Bardhan and N. J. Halas, "Optically-driven collapse of a plasmonic nanogap self-monitored by optical frequency mixing", *Nano Letters* **10**, 1522-8 (2010).
- 182.Richard Lombardini, Ramiro Acevedo, N. J. Halas and Bruce R. Johnson, "Plasmonic Enhancement of Raman Optical Activity in Molecules near Metal Nanoshells: Theoretical Comparison of Circular Polarization Methods", *Journal of Physical Chemistry C* **114**, 7390-7400 (2010).
- 183.Wenxue Chen, Rizia Bardhan, Marc Bartels, Carlos Perez-Torres, Robia Pautler, N. J. Halas, and Amit Joshi, "A Molecularly Targeted Theranostic Probe for Ovarian Cancer", *Molecular Cancer Therapeutics* **9**, 1028-1038 (2010).
- 184.Yurui Fang, Zhipeng Li, Yingzhou Huang, Peter Nordlander, N. J. Halas and Hongxing Xu, "Branched silver nanowires as controllable plasmon routers", *Nano Letters* **10**, 1950-1954 (2010).

185. N. A. Mirin, T. Ali, P. Nordlander, and N. J. Halas, "Perforated Semishells: Far Field Directional Control and an Optical Frequency Magnetic Response", *ACS Nano* **4**, 2701-2712 (2010).
186. Boris Luk'yanchuk, Nikolay I. Zheludev, Stefan A. Maier, Naomi J. Halas, Peter Nordlander, Harald Giessen and Chong Tow Chong, "The Fano resonance in plasmonic nanostructures and metamaterials", *Nature Materials* **9**, 707-715 (2010).
187. Jonathan A. Fan, Kui Bao, Jiming Bao, Rizia Bardhan, Naomi J. Halas, Vinodhan N. Manoharan, Gennady Shvets, Peter Nordlander, and Federico Capasso, "Fano Interference in Self-Assembled Plasmonic Nanoparticle Clusters", *Science* **328**, 1135-8 (2010).
188. S. Mukherjee, H. Sobhani, J. B. Lassiter, P. Nordlander and N. J. Halas, "Fano Shells: nanoparticles with built-in Fano resonances", *Nano Letters* **10**, 2694-2701 (2010).
189. O. Perez-Gonzalez, N. Zabala, A. G. Borisov, N. J. Halas, P. Nordlander, and J. Aizpurua, "Optical Spectroscopy of Conductive Junctions in Plasmonic Cavities", *Nano Letters* **10**, 3090-3095 (2010).
190. J. B. Lassiter, H. Sobhani, J. Fan, Janardan Kundu, F. Capasso, P. Nordlander, and N. J. Halas, "Fano Resonances in Plasmonic Nanoclusters: Geometrical and Chemical Tunability", *Nano Letters* **10**, 3184-3189 (2010).
191. A. Barhoumi and N. J. Halas, "Label free detection of DNA oligonucleotides using surface enhanced Raman spectroscopy", *Journal of the American Chemical Society* **132**, 12792-3 (2010).
192. Ryan Hushka, O. Neumann, A. Barhoumi, and N. J. Halas, "Visualizing light-controlled release of molecules in living cells", *Nano Letters* **10**, 4117-4122 (2010).: DOI: 10.1021/nl102293b
193. R. Bardhan, N. Grady, Tamer Ali and N. J. Halas, "Metallic Nanoshells with Semiconductor Cores: Optical Characteristics Modified by Core Medium Properties", *ACS Nano* **4**, 6169-79 (2010).: DOI: 10.1021/nn102035q
194. N. J. Halas, "Plasmonics: an emerging field fostered by Nano Letters", *Nano Letters* **10**, 3816-3822 (2010).: DOI: 10.1021/nl1032342
195. Jonathan A. Fan, Kui Bao, Chihhui Wu, Jiming Bao, Rizia Bardhan, Naomi J. Halas, Vinodhan N. Manoharan, Gennady Shvets, Peter Nordlander, and Federico Capasso, "Fano-like Interference in Self-Assembled Plasmonic Quadrumer Clusters", *Nano Letters* **10**, 4680-4685 (2010).: DOI: 10.1021/nl1029732
196. Zhipeng Li, Kui Bao, Yurui Fang, Zhiqiang Guan, Naomi Halas, Peter Nordlander and Hongxing Xu, "Effect of a Proximal Substrate on Plasmon Propagation in Silver Nanowires", *Physical Review B* **82**, 241402 (2010).
197. Jared Day, Oara Neumann, N.K. Grady and N. J. Halas, "Nanostructure-mediated launching and detection of 2D surface plasmons", *ACS Nano* **4**, 7566-7572 (2010).: DOI: 10.1021/nn102003c
198. Rizia Bardhan, Wenxue Chen, Marc Bartels, Carlos Perez-Torres, Maria F. Botero, Robin Ward McAninch, Rachel Schiff, Robia G. Pautler, Naomi J. Halas, Amit Joshi, "Real-time tracking of delivery, uptake and distribution of therapeutic nanocomplexes targeting Breast Cancer", *Nano Letters* **10**, 4920-4928 (2010).
199. Hong Wei, Zhipeng Li, Shunping Zhang, Xiaorui Tian, Zhuoxian Wang, Fengzi Cong, Peter J. Nordlander, Naomi J. Halas, and Hongxing Xu, "Quantum Dot-based Local Field Imaging reveals Plasmon-based Interferometric Logic in Silver Nanowire Networks", *Nano Letters* **11**, 471-5 (2011).: DOI: 10.1021/nl103228b
200. Zhipeng Li, Shunping Zhang, Naomi J. Halas, Peter Nordlander, and Hongxing Xu, "Coherent Modulation of Propagating Plasmons in Silver Nanowire-based Structures", *Small* **7**, 593-6 (2011).: DOI: 10.1002/sml.201001775
201. N. Tumasang Fofang, N. K. Grady, Zhiyuan Fan, A. O. Govorov and N. J. Halas, "Plexciton dynamics: Exciton-Plasmon coupling in a J-aggregate-Au Nanoshell Complex provides a mechanism for nonlinearity", *Nano Letters* **11**, 1556-1560 (2011).: DOI: 10.1021/nl104352j
202. Shunping Zhang, Kui Bao, N. J. Halas, H. Xu, and P. Nordlander, "Substrate-Induced Fano Resonances of a Plasmonic Nanocube: a route to increased-sensitivity localized surface plasmon resonance sensors revealed" *Nano Letters* **11**, 1657-1661 (2011).: DOI: 10.1021/nl200135r
203. Y. Zhang, A. Barhoumi, J. Britt Lassiter and N. J. Halas, "Orientation-preserving transfer and directional light scattering from individual light-bending nanoparticles", *Nano Letters* **11**, 1838-1844 (2011).: DOI: 10.1021/nl2008357
204. M. W. Knight, H. Sobhani, P. Nordlander, and N. J. Halas, "Photodetection with active optical antennas", *Science* **332**, 702-4 (2011).: DOI: 10.1126/science.1203056.: DOI: 10.1126/science.1203056
205. N. J. Halas, S. Lal, Wei-Shun Chang, S. Link, and P. Nordlander, "Plasmons in Strongly Coupled Metallic Nanostructures", *Chemical Reviews* **111**, 3913-3961 (2011).: DOI: 10.1021/cr200061k
206. R. Bardhan, S. Lal, A. Joshi, and N. J. Halas, "Theranostic Nanoshells: From Probe Design to Imaging and Treatment of Cancer", *Accounts of Chemical Research* **44**, 936-946 (2011).: DOI: 10.1021/ar200023x

207. Shunping Zhang, Kui Bao, Hong Wei, Yurui Fang, Ulf Hakanson, Naomi J. Halas, Peter Nordlander, and Hongxing Xu, "Chiral Surface Plasmon Polaritons on Metallic Nanowires", *Physical Review Letters* 107, 096801 (2011).: DOI: 10.1103
208. R. Hushka, J. Zuloaga, M. W. Knight, L. Brown, P. Nordlander and N. J. Halas, "Plasmon-assisted DNA release from nanoshells and nanorods", *Journal of the American Chemical Society* 133, 12247-12255 (2011).
209. H. W. Kihm, S. M. Koo, Q. H. Kim, K. Bao, J. E. Kihm, W. S. Bak, S. H. Eah, C. Lienau, H. Kim, P. Nordlander, N. J. Halas, N. K. Park, Dai-Sik Kim, "A Polarizer for the Magnetic Component of Light", *Nature Communications* 2, 451 (2011).
210. Nicholas S. King, Yang Li, Ciceron Ayala-Orozco, Travis Brannan, Peter Nordlander, and Naomi J. Halas, "Angle- and Spectral-dependent Light Scattering from plasmonic nanocups", *ACS Nano* 5, 7254-7262 (2011).: DOI: 10.1021/nn202086u
211. Zheyu Fang, Junyi Cai, Zhongbo Yan, Peter Nordlander, Naomi J. Halas, and Xing Zhu, "Removing a wedge from a nanodisk reveals a Fano resonance", *Nano Letters* 11, 4475-9 (2011).: DOI: 10.1021/nl202804y
212. Yu Zhang and N. J. Halas, "Three-dimensional nanostructures as highly efficient generators of second harmonic light", *Nano Letters* 11, 5519-5523 (2011).: DOI: 10.1021/nl2033602
213. Aoune Barhoumi and N. J. Halas, "Detecting epigenetic modifications of DNA using SERS", *Journal of Physical Chemistry Letters* 2, 3118-3123 (2011).: DOI: 10.1021/jz201423b
214. Na Liu, Shaunak Mukherjee, Kui Bao, Yang Li, Lisa V. Brown, Peter Nordlander, and Naomi J. Halas, "Magnetic plasmon formation and propagation in artificial aromatic molecules", *Nano Letters* 12, 364-9 (2012). DOI: 10.1021/nl203641z
215. J. B. Lassiter, Heidar Sobhani, Mark W. Knight, Witold S. Mielczarek, Peter Nordlander, and Naomi J. Halas, Designing and Deconstructing the Fano Lineshape in Plasmonic Nanoclusters, *Nano Letters* 12, 1058-62 (2012).: DOI: 10.1021/nl204303d
216. Jian Ye, Fangfang Wen, Heidar Sobhani, J. Britt Lassiter, Pol Van Dorpe, P. Nordlander, and N. J. Halas, "Plasmonic nanoclusters: near field properties of the Fano resonance interrogated with Surface Enhanced Raman Scattering", *Nano Letters* 12, 1660-1667 (2012) DOI: 10.1021/nl3000453
217. Jonathan A. Fan, Kui Bao, J. Britt Lassiter, Jiming Bao, Naomi J. Halas, Peter Nordlander, and Federico Capasso, "Near-Normal Incidence Dark-Field Microscopy: Applications to Nanoplasmonic Spectroscopy", *Nano Letters* 12, 2817-2821, (2012); DOI: 10.1021/nl300160y
218. Quang X. Nguyen, T. Grant Belgard, John J. Taylor, Vinit S. Murthy, Naomi J. Halas, and Michael S. Wong, "Water-phase Synthesis of Cationic Silica/polyamine Nanoparticles", *Chemistry of Materials* 24, 1426-1433 (2012); DOI: 10.1021/cm203132m
219. Brooke Hester, Gretchen K. Campbell, Carlos Lopez Mariscal, Carly Levin Filgueira, Ryan Hushka, Naomi J. Halas, and Kristian Helmerson, "Tunable optical tweezers for wavelength-dependent measurements", *Reviews of Scientific Instruments* 83, 043114 (2012).: Rev. Sci. Instrum. 83, 043114 (2012); DOI: 10.1063/1.4704373
220. Na Liu, Shaunak Mukherjee, Kui Bao, Yang Li, Lisa V. Brown, Peter Nordlander, and Naomi J. Halas, "Manipulating magnetic plasmon propagation in metallic nanocluster networks", *ACS Nano* 6, 5482-5488 (2012); DOI: 10.1021/nn301393x
221. Zheyu Fang, Zheng Liu, Yumin Wang, Pulickel M. Ajayan, Peter Nordlander, and Naomi J. Halas, "A Graphene-Antenna Sandwich Photodetector", *Nano Letters* 12, 3808-3813 (2012); DOI: 10.1021/nl301774e
222. Naomi J. Halas, Surbhi Lal, Stephan Link, Wei-Shun Chang, Douglas Natelson, Jason Hafner, and Peter Nordlander, "A Plethora of Plasmonics from the Laboratory for Nanophotonics at Rice University", *Advanced Materials*, 24, 4842-4877 (2012). DOI: 10.1002/adma.201202331.
223. R. Hushka, A. Barhoumi, Qin Liu, Jack A. Roth, Lin Ji, and N. J. Halas, "Gene silencing by gold-nanoshell-mediated delivery and laser-triggered release of antisense oligonucleotide and siRNA", *ACS Nano* 6, 7681-7691 (2012). DOI: 10.1021/nn301135w
224. Mi-Ran Choi, R. Bardhan, N. J. Halas, and S. Clare, "Delivery of nanoparticles to brain metastases of breast cancer using a cellular Trojan horse", *Cancer Nanotechnology*, DOI 10.1007/s12645-012-0029-9.
225. Wei-Shun Chang, J. Britt Lassiter, Yumin Wang, Peter Nordlander, N. J. Halas, and Stephan Link, "A Plasmonic Fano Switch", *Nano Letters* 12, 4977-4982 (2012).: DOI: 10.1021/nl302610v.
226. Fangfang Wen, Jian Ye, Na Liu, Pol van Dorpe, Peter Nordlander and N. J. Halas, "Plasmon transmutation: inducing new modes in nanoclusters by adding dielectric nanoparticles", *Nano Letters* 12, 5020-5026 (2012). DOI: 10.1021/nl302799h.
227. Surbhi Lal, J. H. Hafner, N. J. Halas, S. Link, and P. Nordlander, Plasmonic Nanowires: from waveguiding to passive and active devices; *Accounts of Chemical Research* 45, 1887-1895 (2012). DOI: 10.1021/ar300133j

228. Wenxue Chen, Ciceron Ayala-Orozco, Nrusingh Biswal, Carlos Perez-Torres, Marc Bartels, Rizia Bardhan, Xian-De Liu, Baoan Ji, Amit Deorukhkar, Robia G. Pautler, Sunil Krishnan, Naomi J Halas, Amit Joshi, "Targeting of Pancreatic Cancer with Magneto-Fluorescent Theranostic Gold Nanoshells", *Nanomedicine*, submitted. *Future of Medicine*, ASAP (2013).: DOI/pdf/10.2217/nnm.13.84
229. Zheyu Fang, Yumin Wang, Zheng Liu, Andrea Schlather, Pulickel M. Ajayan, Frank H. L. Koppens, Peter Nordlander, and Naomi J. Halas, "Plasmon-Induced Doping of Graphene", *ACS Nano* 6, 10222-8 (2012). DOI: 10.1021/nl304028b.
230. M. W. Knight, Lifei Liu, Yumin Wang, Lisa Brown, Shaunak Mukherjee, Nicholas S. King, Henry O. Everitt, Peter J. Nordlander, and N. J. Halas, "Aluminum Plasmonic Nanoantennas", *Nano Letters* 12, 6000-4 (2012). DOI: 10.1021/nl303517v. DOI: 10.1021/nl303517v
231. Rebecca Cortez, Joseph M. Slocik, Joseph E. Van Nostrand, Naomi J. Halas, and Rajesh R. Naik, "Electrical conductivity of cationized ferritin decorated gold nanoshells", *J. Appl. Phys.* 111, 124311 (2012); DOI: 10.1063/1.4729800.
232. Na Liu, Fangfang Wen, Yang Zhao, Yumin Wang, Peter Nordlander, Naomi Halas, and Andrea Alù, "Individual Nanoantennas Loaded by Three-dimensional Optical Nanocircuits", *Nano Letters* 13, 142-147(2012). : DOI: 10.1021/nl303689c
233. Shaunak Mukherjee, Florian Libisch, Nicholas Large, Oara Neumann, Lisa V. Brown, Jin Cheng, Britt Lassiter, Emily A. Carter, Peter Nordlander, and Naomi J. Halas, "Hot electrons do the impossible: Plasmon-induced Dissociation of H<sub>2</sub> on Au", *Nano Letters* 13, 240-247 (2012).: DOI: 10.1021/nl303940z.
234. Oara Neumann, Alexander S. Urban, Jared Day, Surbhi Lal, Peter Nordlander, and N. J. Halas, "Solar Vapor Generation enabled by nanoparticles", *ACS Nano* 7, 42-49 (2013). : DOI: 10.1021/nl304948h.
235. Matthew D. Blankschien, Lori A. Pretzer, Ryan Huschka, Naomi J. Halas, Ramon Gonzalez, and Michael S. Wong, "Light-Triggered Biocatalysis using Thermophilic Enzyme-Gold Nanoparticle Complexes", *ACS Nano* 7, 654-663 (2013). DOI: 10.1021/nl3048445.
236. Zheyu Fang, Sukosin Thongrattanasiri, Andrea Schlather, Zheng Liu, Yumin Wang, Pulickel Ajayan, Peter Nordlander, Naomi J. Halas, and Javier Garcia de Abajo, "Gated Tunability and Hybridization of Localized Plasmons in Nanostructured Graphene", *ACS Nano* 7, 2388-95 (2013). :DOI: 10.1021/nl3055835
237. Joseph Herzog, Mark W. Knight, Yajing Li, Kenneth Evans, N. J. Halas, and D. Natelson, "Dark Plasmons in hot spot generation and polarization in interelectrode nanoscale junctions", *Nano Letters* 13, 1359–1364 (2013).: DOI: 10.1021/nl400363d
238. Yu Zhang, Fangfang Wen, Yu-Rong Zhen, Peter Nordlander and Naomi J. Halas, "Coherent Fano Resonances in a Plasmonic Nanocluster Enhance Optical Four-wave Mixing", *PNAS*, 110, 9215–9219(2013).: DOI: 10.1073/pnas.1220304110
239. Lisa V. Brown, Ke Zhao, Nicholas S. King, Heidar Sobhani, Peter Nordlander, Naomi J. Halas, "Surface-Enhanced Infrared Absorption using individual cross antennas tailored to chemical moieties", *Journal of the American Chemical Society* 135, 3688-3695 (2013).: DOI: 10.1021/ja312694g
240. Ali Sobhani, Mark W. Knight, Yumin Wang, Bob Zheng, Nicholas S. King, Peter Nordlander, and Naomi J. Halas, "Narrowband Photodetection in the Near-Infrared with an EOT-plasmon-induced hot electron device", *Nature Communications* 4, 1643 (2013).: DOI:10.1038/ncomms2642
241. Mark W. Knight, Yumin Wang, Alexander S. Urban, Ali Sobhani, Bob Y. Zheng, Peter Nordlander, and Naomi J. Halas, "Embedding Plasmonic Nanostructure Diodes Enhances Hot Electron Emission", *Nano Letters* 13, 1687-1692 (2013).: DOI: 10.1021/nl400196z
242. Zheyu Fang, Yurong Zhen, Oara Neumann, Albert Polman, F. J. Garcia de Abajo, Peter Nordlander, and N. J Halas, "Evolution of light-induced vapour generation at a liquid-immersed metallic nanoparticle", *Nano Letters* 13, 1736-1742 (2013).: DOI: 10.1021/nl4003238
243. Kimberly Heck, Benjamin Janesko, Gustavo Scuseria, Naomi J. Halas, and Michael S. Wong, "Using Catalytic and SERS-active Gold Nanoshells to Understand the Role of Basicity in Glycerol Oxidation", *ACS Catalysis* 3, 2430–2435 (2013).: DOI: 10.1021/cs400643f
244. Oara Neumann, Curtis Feronti, Albert D. Neumann, Anjie Dong, Kevin Schell, Benjamin Lu, Eric Kim, Mary Quinn, Shea Thompson, Nathaniel Grady, Peter Nordlander, Maria Oden, and Naomi J. Halas, "A Compact Solar Autoclave based on steam generation using broadband light-harvesting nanoparticles", *Proceedings of the National Academy of Sciences*, 110 (29) 11677-11681 (2013).: DOI:10.1073/pnas.1310131110
245. Andrea E. Schlather, Nicolas Large, Alexander S. Urban, Peter Nordlander, and Naomi J. Halas, "Near-Field – Mediated Plexcitonic Coupling and Giant Rabi Splitting in Individual Metallic Dimers", *Nano Letters* 13, 3281–3286 (2013).: DOI: 10.1021/nl4014887

246. Yumin Wang, Ziwei Li, Ke Zhao, Ali Sobhani, Xing Zhu, Zheyu Fang, Naomi J. Halas, “Substrate-mediated charge transfer plasmons in simple and complex nanoparticle clusters”, *Nanoscale* 5, 9897-9901 (2013).: DOI: 10.1039/C3NR02835F
247. Alexander S. Urban, Xiaoshuang Shen, Yumin Wang, Nicolas Large, Hong Wang, Mark W. Knight, Peter Nordlander, Hongyu Chen, Naomi J. Halas, “3-D Plasmonic Nanoclusters”, *Nano Letters* 13, 4399-4403 (2013).: DOI: 10.1021/nl402231z.
248. Andrej Grubisic, Shaunak Mukherjee, N. J. Halas, and David Nesbitt, “Anomalously Strong Electric Near-field Enhancements at Defect Sites on Au Nanoshells Observed by Ultrafast Scanning Photoemission Imaging Microscopy”, *Journal of Physical Chemistry C* 117, 22545-22559 (2013).: DOI: 10.1021/jp407424n
249. Nicholas S. King, Mark W. Knight, Nicolas Large, Amanda Goodman, Peter Nordlander, Naomi J. Halas, “Shaping and orienting nanoantennas in three dimensions to control light scattering across a dielectric interface”, *Nano Letters* 13, 5997-6001 (2013). :DOI: 10.1021/nl403199z
250. Nicholas S. King, Mark W. Knight, Henry O. Everitt, Peter Nordlander, and N. J. Halas, “Aluminum for plasmonics”, *ACS Nano* 8, 834-840 (2014).: DOI: 10.1021/nn405495q
251. Zheyu Fang, Yumin Wang, Andrea E. Schlather, Zheng Liu, Pulickel M. Ajayan, F. Javier García de Abajo, Peter Nordlander, Xing Zhu, and Naomi J. Halas, “Active tunable absorption enhancement with graphene nanodisk arrays”, *Nano Letters* 14, 299-304 (2013).: DOI: 10.1021/nl404042h
252. Shaunak Mukherjee, Linan Zhou, Amanda Goodman, Nicolas Large, Ciceron Ayala-Orozco, Yu Zhang, Peter Nordlander, and N. J. Halas, “Hot Electron Induced Dissociation of H<sub>2</sub> on Au nanoparticles supported on SiO<sub>2</sub>”, *Journal of the American Chemical Society* 136, pp 64-67 (2014).: DOI: 10.1021/ja411017b.
253. Ali Sobhani, Adam Lauchner, Sina Najmaei, Ciceron Ayala-Orozco, Fangfang Wen, Jun Lou and Naomi J. Halas, “Enhancing the photocurrent and photoluminescence of CVD-grown single crystal monolayer MoS<sub>2</sub> with resonant plasmonic nanoparticles”, *Applied Physics Letters* 104, 031112 (2014).: DOI: 10.1063/1.4862745
254. Amanda M. Goodman, Yang Cao, Cordula Urban, Oara Neumann, Ciceron Ayala-Orozco, Mark Knight, Amit Joshi, Peter Nordlander, and Naomi J. Halas, “The Surprising *In Vivo* Instability of Near-IR Absorbing Hollow Au-Ag Nanoshells” *ACS Nano* 8, 3222-3231 (2014).: DOI: 10.1021/nn405663h.
255. Ciceron Ayala-Orozco, Jun Liu, Mark W. Knight, Yumin Wang, Jared Day, Peter Nordlander, Naomi J. Halas, “Fluorescence Enhancement of Molecules inside a Gold Nanomatrix”, *Nano Letters* 14, 2926-2933 (2014).:DOI: 10.1021/nl501027j.
256. Ciceron Ayala-Orozco, Cordula Urban, Mark W. Knight, Alexander S. Urban, Oara Neumann, Sandra Bishnoi, Shaunak Mukherjee, Amanda M. Goodman, Heather Charron, Tamika Mitchell, Martin Shea, Ronita Roy, Sarmistha Nanda, Rachel Schiff, Naomi J. Halas, and Amit Joshi, “Au Nanomatrixs as Efficient Near-Infrared Photothermal Transducers for Cancer Treatment: Benchmarking against Nanoshells”, *ACS Nano* 8 (6), pp 6372-6381 (2014).
257. Yu Zhang, Yu-Rong Zhen, Oara Neumann, Jared K. Day, Peter Nordlander and Naomi J. Halas, “Coherent anti-Stokes Raman scattering with single molecule sensitivity using a plasmonic Fano resonance”, *Nature Communications* 5; 4424:1-7; (2014).
258. Christyn A. Thibodeaux, Vikram Kulkarni, Wei-Shun Chang, Oara Neumann, Yang Cao, Bruce Brinson, Ciceron Ayala-Orozco, Chih-Wei Chen, Emilia Morosan, Stephan Link, Peter Nordlander, and Naomi J. Halas, “Impurity-induced Plasmon Damping in individual Cobalt-doped hollow Au nanoshells”, *Journal of Physical Chemistry B* 118, 14056-14061 (2014).
259. Nate Hogan, Alex Urban, Ciceron Ayala-Orozco, Alberto Pimpinelli, Peter Nordlander and Naomi J. Halas, “Nanoparticles heat through light localization”, *Nano Letters* 14, 4640-4645 (2014).
260. Bob Zheng, Yumin Wang, Peter Nordlander, and N. J. Halas, “Color-selective and CMOS-compatible Photodetection based on Aluminum Plasmonics”, *Advanced Materials* 26, 6318-6323 (2014).
261. Yimin Kang, Sina Najmaei, Zheng Liu, Yanjun Bao, Yumin Wang, Xing Zhu, Jun Lou, Naomi J. Halas, Peter Nordlander, Pulickel M. Ajayan, Zheyu Fang, “Plasmonic Hot Electron Induced Structural Phase Transition in Monolayer MoS<sub>2</sub>”, *Advanced Materials*, 26, 6467-6471 (2014).
262. Ciceron Ayala-Orozco, Cordula Urban, Sandra Bishnoi, Alexander Urban, Heather Charron, Tamika Mitchell, Martin Shea, Sarmistha Nanda, Rachel Schiff, Naomi Halas, and Amit Joshi, “Sub-100 nm Gold Nanomatrixs Improve Photo-thermal Therapy Efficacy in Large and Highly Aggressive Triple Negative Breast Tumors”, *Journal of Controlled Release* (special issue) 191, 91-97 (2014).
263. Jana Olson, Alejandro Manjavacas, Lifei Liu, Wei-Shun Chang, Benjamin Foerster, Nicholas King, Mark W. Knight, Peter Nordlander, Naomi J. Halas, and Stephan Link, “Vivid, Full-Color Aluminum Plasmonic Pixels”, *PNAS* 111, 14348-14353 (2014).

264. Wenxue Chen, Ciceron Ayala-Orozco, Nrusingh C Biswal, Carlos Perez-Torres, Marc Bartels, Rizia Bardhan, Gary Stinnet, Xian-De Liu, Baoan Ji, Amit Deorukhkar, Lisa V. Brown, Sushovan Guha, Robia G Pautler, Sunil Krishnan, Naomi J Halas & Amit Joshi, "Targeting pancreatic cancer with magneto-fluorescent theranostic gold nanoshells", *Nanomedicine* 9, 1209-1222 (2014).
265. Sidong Lei, Ali Sobhani, Fangfang Wen, Antony George, Qizhong Wang, Yihan Huang, Pei Dong, Bo Li, Sina Najmaei, James Bellah, Gautam Gupta, Aditya D. Mohite, Liehui Ge\*, Jun Lou, Naomi J. Halas, Robert Vajtai, Pulickel Ajayan, "Ternary CuIn<sub>7</sub>Se<sub>11</sub>: Towards Atomically Layered Photodetectors and Photovoltaic Devices", *Advanced Materials* 26, 7666-7672 (2014). Mark Brongersma, Naomi J. Halas, and Peter Nordlander, "Hot Electron Science and Technology", *Nature Nanotechnology* 10, 25-34 (2015).
267. Sidong Lei, Fangfang Wen, Bo Li, Qizhong Wang, Yihan Huang, Yongji Gong, Yongmin He, Pei Dong, James Bellah, Antony George, Liehui Ge<sup>1</sup>, Jun Lou, Naomi J. Halas, Robert Vajtai, Pulickel M. Ajayan, "An Optoelectronic Memory using Two-Dimensional Materials", *Nano Letters* 15, 259-265 (2015).
268. Lisa Brown, Lisa V. Brown, Xiao Yang, Ke Zhao, Bob Y. Zheng, Peter Nordlander, Naomi J. Halas, "Fan-Shaped Gold Nanoantennas above Reflective Substrates for Surface-Enhanced Infrared Absorption (SEIRA)", *Nano Letters* 15, 1272-1280 (2015).
269. Jared Day, Nicolas Large, Peter Nordlander, and Naomi J. Halas, "Standing Wave Plasmon Modes Interact in an Antenna-Coupled Nanowire", *Nano Letters* 15, 1324-1330 (2015).
270. S. Gottheim, Hui Zhang, A. O. Govorov, and N. J. Halas, "Fractal Nanoparticle Plasmonics: the Cayley Tree", *ACS Nano* 9, 3284-3292 (2015).
271. Wei-Shun Chang, Fangfang Wen, Debadi Chakraborty, Man-Nung Su, Yue Zhang, Bo Shuang, Peter Nordlander, John E. Sader, Naomi J. Halas and Stephan Link, "Tuning the Acoustic Frequency of a Gold Nanodisk through its Adhesion Layer", *Nature Communications* 6, 7022 (2015).
272. Michael McClain, Andrea Schlather, Alejandro Manjavacas, Kenton Whitmire, Emilie Ringe, Henry O. Everitt, Peter Nordlander, and Naomi J. Halas, "Aluminum Nanocrystals", *Nano Letters* 15, 2751-2755 (2015).
273. Sidong Lei, Fangfang Wen, Liehui Ge, Sina Najmaei, Antony George, Yongji Gong, Weilu Gao, Zehua Jin, Jun Lou, Bo Li, Junichiro Kono, Robert Vajtai, Pulickel Ajayan and Naomi J. Halas, "An Atomically Layered InSe Avalanche Photo detector", *Nano Letters* 15, 3048-3055 (2015).
274. Fangfang Wen, Yue Zhang, Sam Gottheim, Nicholas King, Yu Zhang, Peter Nordlander, and N. J. Halas, "Charge Transfer Plasmons: optical frequency conductances and tunable infrared resonances", *ACS Nano* 9, 6428-6435 (2015).
275. Bob Y. Zheng, Hangqi Zhao, Alejandro Manjavacas, Michael McClain, Peter Nordlander, Naomi J. Halas, "Distinguishing between Plasmon-induced and Photoexcited Carriers in a device geometry", *Nature Communications* 6, 7797 (2015).
276. Adam Lauchner, Andrea E. Schlather, Alejandro Manjavacas, Yao Cui, Michael J. McClain, Grant J. Stec, F. Javier García de Abajo, Peter Nordlander, and Naomi J. Halas, "Molecular Plasmons", *Nano Lett.* 15, 6208-6214 (2015).
277. Ali Sobhani, Alejandro Manjavacas, Yang Cao, Michael McClain, F. Javier Garcia de Abajo, Peter Nordlander, N. J. Halas, "Dramatic Linewidth Narrowing of an Aluminum Nanoparticle Plasmon Resonance by Interaction with an Aluminum Film", *Nano Letters* 15, 6946-6951 (2015).
278. Christopher J. DeSantis, Da Huang, Hui Zhang, Nathaniel Hogan, Hangqi Qui, Yifei Zhang, Alejandro Manjavacas, Yue Zhang, Wei-Shun, Chang, Peter Nordlander, Stephan Link, and Naomi J. Halas, "Laser-induced spectral hole-burning through a broadband distribution of Au Nanorods", *Journal of Physical Chemistry C* (invited article, special issue honoring Richard Van Duyne), articles ASAP: DOI: 10.1021/acs.jpcc.5b08290.
279. Nicholas S. King, Lifei Liu, Xiao Yang, Henry O. Everitt, Peter Nordlander, and Naomi J. Halas, "Fano Resonant Aluminum Nanoclusters for Plasmonic Colorimetric Sensing", *ACS Nano* 9, 10628-10636 (2015).
280. Oara Neumann, Albert D. Neumann, Edgar Silva, Ciceron Ayala-Orozco, Shu Tian, Peter Nordlander, and Naomi J. Halas, "Nanoparticle-mediated, Light-Induced Phase Separations", *Nano Letters* 15, 7880-5 (2015).
281. Chad P. Byers, Hui Zhang, Dayne F. Swearer, Mustafa Yorulmaz, Benjamin S. Hoener, Da Huang, Anneli Hoggard, Wei-Shun Chang, Paul Mulvaney, Emilie Ringe, Naomi J. Halas, Peter Nordlander, Stephan Link, Christy F. Landes, "Plasmonic drawbridges: Active control of nanoparticle optical properties", *Science Advances*, 1, 11, e1500988 (2015). DOI: 10.1126/sciadv.1500988
282. Jana Olson, Alejandro Manjavacas, Tiyaash Basu, Da Huang, Andrea Schlather, Bob Zheng, Naomi Halas, Peter Nordlander, and Stephan Link, "High chromaticity aluminum plasmonic pixels for active liquid crystal displays", *ACS Nano* 10, 1108-1117 (2016).
283. Linan Zhou, Chao Zhang, Michael J. McClain, Alejandro Manjavacas, Shu Tian, Felix Berg, Henry O. Everitt, Peter Nordlander, and Naomi J. Halas, "Photocatalytic Hydrogen Dissociation using Aluminum Nanoparticles",



- Nano Letters 16, 1478-1484 (2016).
284. Benjamin Cerjan, Xiao Yang, Peter Nordlander, and Naomi J. Halas, "Aluminum Antennas for Self-Calibrated Surface Enhanced Infrared Absorption Spectroscopy", ACS Photonics 3, 354-60 (2016).
  285. Yongmin He, Sidong Lei, Ali Sobhani, Zhuhua Zhang, Yongji Gong, Wu Zhou, Bo Li, Yingchao Yang, Yuan Zhang, Xifan Wang, Boris Yakobson, Robert Vajtai, Naomi J. Halas, Erqing Xie, Pulickel Ajayan, "Layer Engineering of 2D semiconductor junctions", Advanced Materials, accepted.
  286. Mehbuba Tanzid, Ali Sobhani, Christopher J. DeSantis, Yao Cui, Adam Samaniego, Ashok Veeraraghavan and Naomi J. Halas, "Imaging through Plasmonic Nanoparticles", Proceedings of the National Academy of Sciences of the United States of America 113, 5558-5563(2016).
  287. Yu Zhang, Alejandro Manjavacas, Linan Zhou, Ciceron Ayala-Orozco, Liangliang Dong, Jared K. Day, Peter Nordlander and Naomi J. Halas, "Towards Surface Plasmon Enhanced Optical Parametric Amplifier (SPOPA): a Tunable Nanoscale Infrared Light Source", Nano Letters 16, 3373-3378 (2016).
  288. Dayne F. Swearer, Hangqi Zhao, Linan Zhou, Chao Zhang, Hossein Robatjazi, John P. Mark Martirez, Caroline M. Krauter, Sadeh Yazdi, Michael J. McClain, Emilie Ringe, Emily A. Carter, Peter Nordlander, and Naomi J. Halas, "Heterometallic Antenna-Reactor Complexes for Photocatalysis", PNAS 113, 8916-8920 (2016). DOI: 10.1073/pnas.1609769113
  289. Yao Cui, Adam Lauchner, Alejandro Manjavacas, F. Javier Garcia de Abajo, Naomi J. Halas, Peter J. Nordlander, "Molecular Plasmon-Phonon Coupling", in revision.
  290. Oara Neumann, Shu Tian, Albert D. Neumann, Christyn Thibodeaux, Shobhit Shubhankar, Julius Müller, Edgar Silva, Sandra W. Bishnoi, and Naomi Halas, "Integrated solar steam and bioconversion for standalone solar-based cellulosic bioethanol production", submitted.
  291. Mehbuba Tanzid, Nathaniel J. Hogan, Ali Sobhani, Hossein Robatjazi, Adithya K. Pediredla, Adam Samaniego, Ashok Veeraraghavan and Naomi J. Halas, "Absorption-induced image resolution enhancement in scattering media", ACS Photonics, submitted.
  292. Mustafa Yorulmaz, Anneli Hoggard, Hangqi Zhao, Fanfang Wen, Wei-Shun Chang, Naomi J. Halas, Peter Nordlander, Stephan Link, "Absorption Spectroscopy of an Individual Fano Cluster", submitted.
  293. Chao Zhang, Hangqi Zhao, Linan Zhou, Andrea E. Schlather, Liangliang Dong, Michael J. McClain, Dayne F. Swearer, Peter Nordlander, and Naomi J. Halas, "Al-Pd Nanodisk Heterodimers as Antenna-Reactor Photocatalysts", submitted.
  294. Valeria S. Marangoni, Oara Neumann, Caterina Kaffes, Hui Zhang, Sandra Bishnoi, Ciceron Ayala-Orozco, Valtencir Zucolotto, James Bankson, Peter Nordlander, and Naomi J. Halas, "Gadolinium(III)-encapsulating Au Nanomatryoskhas: enhanced T<sub>1</sub> Magnetic Resonance Contrast in a Theranostic Nanoparticle", ACS Nano, to be submitted.
  295. Anders Kristensen, Joel K.W. Yang, Sergey I. Bozhevolnyi, Stephan Link, Peter Nordlander, Naomi J. Halas and N. Asger Mortensen, "Plasmonic Colour Generation", submitted.
  296. Bob Zheng
  297. Pratiksha Dongare, Katherine Zodrow, et al., Solar membrane distillation, manuscript in preparation.
  298. Andie Schlather
  299. Amanda I
  300. Amanda II
  301. Thej and Isabell Thomann
  302. Ali Sobhani,

### Book Chapters:

1. I. N. Duling, III, C-C. Chi, W.J. Gallagher, D. Grischkowsky, N.J. Halas, M.B. Ketchen, and A.W. Kleinsasser, "Propagation of Ultrashort Electrical Pulses on Superconducting Transmission Lines", 110-113, in *Ultrafast Phenomena V*, eds. G. Fleming and A.E. Siegman, New York: Springer-Verlag (1986).
2. L.T. Hudson, A.V. Barnes, N.J. Halas, R.F. Haglund, M.H. Mendenhall, P. Nordlander, N.H. Tolk, Y. Wang, and R.A. Rosenberg, "PSD of Excited Hydrogen from KCl", in *Desorption Induced by Electronic Transitions (DIET III)*, eds. R.H. Stulen and M.L. Knotek, New York: Springer-Verlag, 274-277 (1988).
3. Corey Radloff, Cristin Moran, Joseph Jackson, and N. J. Halas, "Nanoparticles: Building Blocks for Functional Nanostructures" in *Molecular Nanoelectronics*, ed. Mark Reed and Takhee Lee, American Scientific Publishers, 2003.

4. Chen, J., Lin, A., Loo, C., Hsu, K., West, J., Halas, N., and Drezek, R., "Emerging Optical Technologies for Functional and Molecular Imaging", in *Advances in Diagnosis and Therapy of Breast Disease*, ed. Eva Singletary, in press.
5. L. R. Hirsch, N. J. Halas, and J. L. West, "A Whole Blood Immunoassay facilitated by Gold Nanoshell-conjugate Antibodies", *Bionanotechnology Protocols (Methods in Molecular Biology)*, eds. Sandra Rosenthal and David W. Wright (2003).
6. Loo, C., Hirsch, L., Halas, N., West, J., and Drezek, R., "Diagnostic and Therapeutic Applications of Nanoshells", in *Nanofabrication for Biomedical Applications*. Hormes, Kumar and Leuschner (Eds). Wiley, in press (2004).
7. Hirsch, L., Drezek, R., Halas, N., and West, J., "Biomedical Applications of Nanoshells", in *Encyclopedia of BiOMEMs and Bionanotechnology*, Tejal Desai and Sangeeta Bhatia (eds). Kluwer, in press (2004).
8. J. Steele, N. Grady, P. Nordlander, and N. J. Halas, "Plasmon Hybridization in Complex Nanostructures", in *Plasmonics and Nanophotonics*, Mark Brongersma and Pieter G. Kik (eds), Springer-Verlag (2007).

#### **Named Lectureship, Keynote and Plenary Talks:**

1. "Nanotechnology for the Real World", Brother Lucian Blersch 2<sup>nd</sup> Annual Science Symposium, St. Edwards University, San Antonio, TX, Feb 2002.
2. "Plasmonic nanostructures: Optical design at nanoscale dimensions", International Symposium on Clusters and Nano-Assemblies (ISCANA), Virginia Commonwealth University, November 2003 (Plenary talk).
3. Plenary Talk, 3<sup>rd</sup> Annual Rice Alliance Nanotechnology Innovation Forum, Rice University, January 2004 (declined due to conflict).
4. Plenary talk, 113rd TMS Annual Meeting (Minerals, Metals and Materials), Charlotte, NC, March 2004 (declined due to travel conflict).
5. "Nanoshells: using Nanotechnology to harvest light for Biomedicine", Benson Lecturer, Physics Department, Miami University, April 2004 (Public Lecture); "Plasmonic Nanostructures by Rational Design", Benson Lecturer, Physics Department, Miami University, April 2004 (Physics Colloquium).
6. "Nanoshells: New tools for manipulating light at the nanoscale", Nanotech 2004 Conference, Tokyo, Japan, March 2004 (Plenary talk).
7. "Nanoshells: Tunable Plasmonic Nanostructures by Rational Design", Women in Science and Engineering Distinguished Lecture and Physics Colloquium, Kansas State University, Manhattan, Kansas, April 2004.
8. Keynote Address, Chips to Hits Meeting, Boston, MA, September 2004.
9. "Truth and Beauty at the Nanoscale: Texas-Sized Molecules and Cancer Therapy", Houston Philosophical Society, September 2004.
10. "Plasmonics: Optical Nanostructures by Rational Design", Distinguished Scientist Lecture Series, Trinity University, San Antonio, TX, February 21<sup>st</sup>, 2005 (technical lecture); "Nanoshells: using nanotechnology to harvest light for biomedicine", Distinguished Scientist Lecture Series, Trinity University, San Antonio, TX, February 21<sup>st</sup>, 2005 (popular lecture).
11. "Plasmonics: Optics at the Nanoscale", Weissberger-Williams Lecture Series, Kodak, Rochester, NY, April 2005.
12. Plenary Speaker, 13<sup>th</sup> Annual Advocacy Training Conference, National Breast Cancer Coalition Fund, Washington DC, May 2005.(cancelled due to illness).
13. "Plasmonics: Optics at the Nanoscale", The 2005 Lansdowne Lecturer in Chemistry and Electrical Engineering, University of Victoria, CA, September, 2005 (technical lecture); "Nanoshells: using Nanotechnology to harvest light for biomedicine", The 2005 Lansdowne Lecturer in Chemistry and Electrical Engineering, University of Victoria, CA, September, 2005 (popular lecture).
14. Plenary talk, NIST Colorado Nanoscience Conference, October 2005.(declined)
15. "Designing Optical Nanotools for Biomedicine", The Dorothy J. Killam Lecture, Montreal Neurological Society, McGill University, May 2006.
16. "Nanoshells: from plasmon physics to cancer therapy" and "Nanoengineered Plasmonic substrates for surface enhanced spectroscopies", Colloquium and Tutorial, Kavli Nanoscience Institute Distinguished Speaker Series, Caltech, May 2006.
17. "Plasmonic Nanostructures: Artificial Molecules," Plenary Talk, SPIE (Society for Photo-optical Instrumentation Engineers) Annual Meeting, San Diego, CA, August 2006.
18. "When plasmons interact, worlds collide", Kirkpatrick Lecture, Illinois Institute of Technology, Chicago, IL, September 2006.

19. "Plasmonic Nanoparticles: Molecular Orbitals writ large" Annual Invited Lecturer, Institute for Materials Research, University of Connecticut, February 2007.
20. "Designing optical Nanotools for Biomedicine" Keynote Speaker, Peachey Conference, Purdue, University, Lafayette, IN, February 2007.
21. "Designing optical Nanotools for Biomedicine" Plenary Speaker, IOP Annual Meeting in Nanoscale Physics and Technology, Southampton, UK, March 2007.
22. "Using Nanotechnology to Harvest Light for Nanomedicine" WINS Lecturer, University of Western Ontario, May 2007 (popular lecture); WINS Lecturer, University of Western Ontario, May 2007 (technical keynote lecture).
23. "Plasmonic Nanoparticles: Artificial Molecules", Plenary speaker, SPP3 Conference, Dijon, France, June 2007.
24. "Nanoplasmonics: Artificial molecules designed for applications", Plenary Speaker, Special Pre-Symposium Workshop in Nanophotonics, 75<sup>th</sup> Anniversary of Applied Physics Society of Japan, Tokyo, Japan August 2007.
25. プラズモニクス : ナノシェルの科学とマジック (Plasmonics: the science and magic of nanoshells), Keynote Lecture, Symposium of the 75<sup>th</sup> Anniversary of the Japan Society of Applied Physics (JSAP), Tokyo, Japan, August 2007.
26. "Plasmonics: merging nanoparticles with light", The Trustees Council of Penn Women Lecture in Chemistry, University of Pennsylvania, February 18-19, 2008.
27. "Nanodays in the Chippewa Valley" Distinguished Invited Speaker, University of Wisconsin Eau Claire, April 3<sup>rd</sup>, 2008 (technical and public lectures)
28. Plasmonics for SERS, SEIRA, and SERS-SEIRA: Substrate design and applications", Keynote talk, SPIE Plasmonics, San Diego, CA, August 2008.
29. "Plasmonic Nanoparticles: artificial molecules with real applications", MESA+ Annual Symposium, Plenary Speaker, Enschede, Netherlands, September 2008.
30. "Optics at the Nanoscale: Merging Nanoparticles with Light", Keynote Speaker, COMSOL Conference, Boston, MA, October 9-11, 2008.
31. Distinguished Visiting Scientist, Institute of Optical Science, University of Toronto, October 14-20, 2008 (several technical and public lectures).
32. Director's Colloquium, Los Alamos National Laboratory, December 2008 (postponed due to snow-related lab closing).
33. Distinguished Lecture in Mathematical and Physical Sciences, National Science Foundation, Arlington, VA, February 2009.
34. "Photonic Nanobiomedicine: merging nanotechnology with light for improved diagnostics and new therapeutics", Plenary talk, Nanomedicine Conference, University of North Carolina School of Pharmacy, Chapel Hill, NC, May 2009.
35. "Plasmonics at the Nanoscale: taking light in new directions", Keynote talk, Plasmonics Symposium, ICMAT, Singapore, June 2009.
36. "Plasmonics: from artificial molecules to real applications", Munushian Distinguished Lecturer Series, Department of Electrical Engineering-Electrophysics, University of Southern California, Los Angeles, CA, February 2010.
37. "Plasmonics: artificial molecules, real applications", R. E. Tressler Distinguished Lecture in Materials, Penn State University, April 2010.
38. Plenary talk, Norwegian Physical Society, Ålesund, Norway, April 2010 (declined).
39. "Plasmonics: optics at the nanoscale for applications in energy and BIOMEDICINE", Keynote presentation, International Nanotechnology Conference on Communication and Cooperation, Grenoble, France, May 2010.
40. Plenary talk, P4K meeting, San Sebastian, Spain, September 2010
41. Keynote Address, Regional Undergraduate Research Symposium, Rice University, October 2010.
42. Plenary Talk, New England Section of the American Physical Society, Brown University, Providence, RI, November 2010.
43. "Plasmonics : Nanoscale Manipulation of Light", Miller Institute Lecture Series, U. C. Berkeley, June 2011.
44. "Nanophotonics: Where We Are and Where We're Going", SPIE Annual Meeting, San Diego, CA, August 2011.
45. "Plasmonics: Applications and Opportunities in Nanoscale Optics", ChinaNano, September 2011.
46. "Plasmonics: nanoscale manipulation of light", NanoStar Fellow, University of Virginia, October 2011.
47. "Nanoscale Manipulation of Light: new physical insights and technological opportunities", Hascoe Lecturer, University of Connecticut, March 2012.
48. "Frontiers of Plasmonics: enabling new applications", Plenary talk, Meta-12, Paris, France, April 2012.

49. "Nanoscale Manipulation of Light: new physical insights and technological opportunities", Plenary talk, E-MRS Meeting, May 2012.
50. "Electrons "do the wave": light-driven effects at nanoparticle surfaces", Alexander M. Cruikshank award lecture, Noble Metal Nanoparticles Gordon Research Conference, June 2012.
51. "Plasmonics for the People: two useful applications", Keynote Address, Annual Photonics Division Meeting, GE Global Research Center, Albany, NY, September 2012.
52. Lavoisier Lectures (series of three lectures), Universite de Paris-Diderot, October 2012.
53. Reilly Lectures (series of three lectures), University of Notre Dame, February 2013.
54. "Nanoscale manipulation of light: physical insights and technological opportunities", Plenary talk, Finnish Physical Society, March 2013.
55. "Nanoscale manipulation of light: physical insights and technological opportunities", Plenary talk, RQMP meeting, Montreal, CA, May 2013.
56. "Nanoparticle-enabled liquid-vapor Phase transitions: Fundamental physical chemistry and a new solar technology", Plenary talk, SPP-6, Ottawa, CA, Spring 2013.
57. "Plasmon-enabled nanoparticle-based chemistry and spectroscopies", ACS Fall Meeting, Indianapolis, IN, August 2013.
58. "Frontiers of Plasmonics: New Materials, Interactions, and Applications", University of Maryland Booz Allen Hamilton endowed lecture, October 2013.
59. Frontiers in Chemical Research (three lectures), "Plasmonics: Nanoparticles Putting Light To Work", TAMU, October 2013.
60. "Solar steam generation using nanoparticles", Plenary talk, 3<sup>rd</sup> European Energy Conference, Budapest, Hungary, October 2013.
61. Plenary talk, "Plasmonics: Nanoparticles putting light to work", 44<sup>th</sup> Physics of Quantum Electronics Conference, Snowbird, UT, January 2014.
62. "Optics at the Nanoscale: shedding light on cross-cutting science and technologies", AWIS Award Lecture, Houston, TX, January 2014.
63. "Optics at the Nanoscale: shedding light on cross-cutting science and technologies", Rice University, Franklin/Brice/Houston lecture, January 2014.
64. "Plasmonics for the People: two useful applications", Nanqiang Lecture, Xiamen University, Xiamen, China, March 29, 2014.
65. "Plasmon-enabled processes: new opportunities in chemical science and emerging technologies", Gerhard Schmidt Lecture at the Chemistry Faculty of the Weizmann Institute of Science, April 2014.
66. "Optics at the Nanoscale: shedding light on cross-cutting science and technologies", Kapp Lecture, Department of Chemistry, Virginia Commonwealth University, April 2014.
67. "Fano resonant plasmonic clusters: a nanoscale component for subwavelength nonlinear optics", ICORS 2014, Jena, Germany, August 2014: Plenary lecture.
68. "Plasmon-enabled processes: new opportunities in cross-cutting science and emerging technologies", Plenary talk, Texas Section of the APS meeting, Texas A&M University, October 2014.
69. "Plasmonics: shedding light on cross-cutting science and technologies", OASIS, Tel Aviv, Israel, March 2015.
70. "Plasmonics: shedding light on cross-cutting science and technologies", Walter H. Coulter Lecture, Pittcon Plenary Talk, New Orleans, LA, March 2015.
71. "Plasmon-enabled processes: new opportunities in cross-cutting science and emerging technologies", University of Delaware Distinguished Lecture Series, April 2015.
72. "Solar Steam Generation: Principles and Applications", Lester Davis Symposium, Mississippi State University, May 2015.
73. ICAVS Plenary talk, Vienna, Austria, July 2015 (declined).
74. "Solar Steam generation and applications", Bayer Lecture Series (popular talk), U. Pittsburgh, September 2015.
75. "Plasmonics: from noble metals to sustainability", Bayer Lecture Series (technical talk), U. Pittsburgh, September 2015.
76. "Plasmon-enabled processes: new opportunities in chemical science and emerging technologies", Plenary talk, Dow Chemical Company, Annual R&D Employees meeting, Freeport, TX, October 2015.
77. "Merging light with nanoparticles: artificial molecules, photocatalysis, cancer therapy, and solar steam", Plenary talk, Anniversary of the Royal Swedish Academy of Sciences, Lund University, October 2015.
78. Plenary talk, ISCANA Conference, Richmond, VA, October 2015 (declined).
79. "Plasmonic Processes in Biomedicine", Plenary talk, Swedish Association of Colloid and Surface Chemistry, Uppsala, Sweden, November 2015.

80. "Frontiers in Active and Sustainable Plasmonics", Physics of Quantum Electronics Conference, Snowbird, UT, January 2016.
81. Plenary talk, German Physical Society, March 2016.
82. American Physical Society Kavli Symposium Plenary Lecture, March 2016.
83. Plenary talk, International Conference in Nanophotonics (ICNP) Taiwan, Spring 2016.
84. Plenary talk, ISSPIC, Jyväskylä, Finland, August 2016.
85. Plenary talk, First International Conference in Biophotonics, Singapore, July 2016.
86. C. N. Yang Professorship Lecture, University of Hong Kong, October 2016.
87. Lewis Lecture (Lecture Series), University of Cambridge Chemistry Department, April 2017.

#### Invited Talks:

88. "Photoconductive Generation of Subpicosecond Electrical Pulses and their Measurement Applications", Picosecond Electronics and Optoelectronics Conf., January 1987.
89. "Probing Superconductors with Ultrashort Laser Pulses", IQEC 1987, April 1987.
90. "Study of Surface Recombination using Time-Resolved Photoemission", Proceedings of the Short Wavelength Coherent Radiation Conference, North Falmouth, MA, September 1989.
91. "Depletion Region Carrier Dynamics at GaAs Interfaces", Chalmers University, Goteborg, Sweden, December 1990.
92. "Time-Resolved Relaxation Processes in Solid  $C_{60}$ ", Physics Colloquium, The University of Houston, Houston, TX, November 1991.
93. "Time-Resolved Carrier Dynamics Studies in Solid  $C_{60}$ ", Physics Colloquium, Bryn Mawr College, Bryn Mawr, PA, December 1991.
94. "Time-Resolved Carrier Relaxation in Solid  $C_{60}$ ", Research Seminar, Vanderbilt University, March 1992.
95. "Slow Relaxations in the Solid Phase of  $C_{60}$ ", Physics Department, Texas A&M University, College Station, TX, May 1992.
96. "Time-Resolved Optical Measurements of Carrier Dynamics in  $C_{60}$ ", Research Seminar, Freie Universitet, Berlin, FRG, June 1992.
97. "Optical Measurements of Slow Relaxation Decays in Solid  $C_{60}$ ", Research Seminar, Physics Department, Rutgers University, Piscataway, NJ, July 1992.
98. "Carrier Dynamics in Solid  $C_{60}$ ", OELase, Los Angeles, CA, January 1993.
99. "Properties and Potential Applications of Fullerene Solids", Research Colloquium, Department of Mechanical Engineering and Materials Science, Rice University, September 1993.
100. "Fullerenes: Dynamical Properties and Potential Applications", Physics Department, Sam Houston State University, September 1993.
101. "Properties and Potential Applications of Fullerene Solids", Office of Naval Research Free Electron Laser Program Review, Nashville, TN, October 1993.
102. "Broad Bandwidth Frequency Doubling and Harmonic Generation of  $Ti$ : Sapphire Laser Pulses", SPIE meeting, OE/Lase, Los Angeles, CA, January 1994.
103. "Imaging Fullerene Nanotips", American Physical Society Meeting, Texas Section, Austin, TX, October 1994.
104. "Photoluminescence in Single Crystal  $C_{60}$ : an Excimer Model", SPIE Annual meeting, San Diego, CA, July 1995.
105. "Fullerene STM Tips", Electrochemical Society Meeting, Los Angeles, CA, May 1996.
106. "Imaging Electron Scattering with Fullerene STM Tips", Physics Department and Materials Research Society Colloquium, Texas A&M University, College Station, Texas, May 1996.
107. "Fullerene STM Tips: Preparation and Imaging Applications," NASA Marshall Space Flight Center, Huntsville AL, June 1996.
108. "Imaging Electron Scattering at Graphite Point Defects using Fullerene STM Tips", Texas Section of the American Physical Society Meeting, Arlington, TX, October 1996.
109. "Fullerene Functionalized Scanning Tunneling Microscope Tips: Preparation, Characterization, and Applications", International Conference on Synthetic Metals, Salt Lake City, UT July 1996.
110. "Preparation, Characterization and Imaging Applications of  $C_{60}$  STM Tips", SPIE Annual Meeting, Denver, CO, August 1996.
111. "Molecular STM Tips", invited talk at the American Physical Society March Meeting, Frontiers in Physics Session, Kansas City, MO, March 1997.

112. "Topics in Nanoengineering", East Texas Regional AIChE Meeting, Beaumont, TX, April 1997.
113. "Molecular Nanoprobes and Metal Nanoshells", Physics Department, University of Pittsburgh, Pittsburgh, PA, April 1997.
114. "Two-Photon Photoemission Spectroscopy of Triplet Excitons in MEH-PPV Films", Johannes Kepler Universitat, Linz, Austria, May 1997.
115. "Fullerene Nanoprobes and Metal Nanoshells", IBM Rushlikon Laboratory, Zurich, Switzerland, May 1997.
116. "Imaging of Point Defects on Graphite Surfaces with Molecular STM Tips", LCAM, U. Paris-Sud, Orsay, France, May 1997.
117. "Properties and Applications of Metal Nanoshells and their Composite Solids", Solid State and Surface Chemistry Workshop, Office of Naval Research, Arlington, VA, October 1997.
118. "The Designer Resonances of Metal Nanoshells", 1998 Cluster Workshop, National Institute for Advanced Interdisciplinary Research (Yu-go-ken), Tsukuba, Japan, January 1998.
119. "Femtosecond Electron Dynamics in Gold Nanoshells", American Physical Society Meeting, Los Angeles, CA, March 1998.
120. "Nanoengineering: from Science Fiction to Real World Solutions", The Dean's Series, School of Continuing Studies, Rice University, Houston, TX, April 1998.
121. "Functional Nanostructures", Physical Chemistry Research Seminar, University of Houston, Houston, TX, November 1998.
122. "STM with Functionalized Tip and Metal Nanoshells", Condensed Matter Physics Seminar, University of Texas, April 1999.
123. "Fabrication, Properties and Terahertz Applications of Metal Nanoshells", ECE Department, Oklahoma State University, July 1999.
124. "Nanoshell-Based Infrared and Terahertz Adaptive Materials and Devices", Army Research Laboratory, Aberdeen, MD, July 1999.
125. "Nanoshell-Based Infrared and Terahertz Adaptive Materials and Devices", Department of Defense Research and Engineering (DDR&E), Institute for Defense Analyses, Alexandria, VA, July 1999.
126. "Current Status and Future Trends in Near Field and Scanning Microscopies", overview talk, NAS sponsored 2<sup>nd</sup> annual Japan-American Frontiers of Science Symposium (JAFOS), Tsukuba, Japan, October 1999.
127. "Metal Nanoshells", Graduate Research Seminar, ECE Department, Purdue University, October 1999.
128. "Nanotips and Nanoshells", Chemistry Colloquium, Rice University, October 1999.
129. "Metal Nanoshells: Properties and Interactions", Texas Section of the American Physical Society, University of Texas at Austin, October 1999.
130. "Oxidation Inhibition in Conducting Polymers-Gold Nanoshell Composites", Optical Probes 2000, Salt Lake City, UT, February 2000.
131. "Tailoring Novel Materials Properties with Composite Nanoparticles", Mechanical Engineering and Materials Science Department, Rice University, February 2000.
132. "Nanoengineering of Optical Properties: Applications and Commercialization of Metal Nanoshells", Commercialization of Nanostructured Materials, Orlando, Florida, April 2000.
133. "Nanoshells and Applications", Colloquium, Materials Science Department, Northwestern University, April 2000.
134. "Effects of Microgravity on Nanoparticle Growth", NASA Microgravity Conference, Huntsville, AL, June 2000.
135. "Metal Nanoshell-polymer Composites: Changing the Properties of Functional Materials", International Conference for Synthetic Metals, Bad Gastein, Austria, July, 2000.
136. "The Nanoscience of Color: Properties and Applications of Metal Nanoshells", Bryn Mawr College, Bryn Mawr, PA, November 2000.
137. "Metal Nanoshell-Polymer Composites", ACS Regional Meeting, New Orleans, LA, December 2000.
138. "Nanoengineering Optical Properties with Metal Nanoshells: New Materials and Applications", University of Arizona Optical Sciences Center, Tucson, AZ, March 2001.
139. "Metal Nanoshells: Materials Applications of Designer Nanoparticles", Materials Science Seminar, University of Washington, Seattle, WA, March 2001.
140. "The Nanoengineering of Optical Properties: New Materials and Applications in Biotechnology", Department of Electrical Engineering, University of Texas, Austin, TX, March 2001.
141. "Metal Nanoshells: Surface Chemistry and Dynamics", Electrochemical Society Meeting, Washington, D.C., March 2001.
142. "Metal Nanoshells: Light Scattering Properties and their Applications Towards Sensor Protection", DOD Sensor Protection Workshop, Army Research Laboratory, Adelphi, MD, March 2001.

143. "Metal Nanoshells and the Rest of the Universe", Rice University Research Seminar, Chemistry Department, April 2001.
144. "The Nanoengineering of Optical Properties using Metal Nanoshells", Lawrence Livermore National Laboratory, Materials Research Institute Seminar, April 2001.
145. "Metal Nanoshells: Frequency Agile Optical Properties and Applications", U. S. Air Force Research Laboratory, Wright Patterson AFB, Dayton, OH, May 2001.
146. "Metal Nanoshells: Shaping the Flow of Light One Nanoparticle at a Time", Research Colloquium, University of California, Riverside, CA, May 2001.
147. "Metal Nanoshells: a Photonic Approach to Nanobiotechnology", IBC Conference on Nanobiotechnology, San Diego, CA, July 2001.
148. "Nanotechnology and its Emerging Capabilities", NCI sponsored workshop, NIST, Gaithersburg, MD, August 2001.
149. "Metal Nanoshells and Their Applications at the Nano-Bio Interface", Red Herring Conference, Boston, MA, September 2001 (cancelled due to September 11 attacks).
150. "Metal Nanoshells: Shaping the Flow of Light One Nanoparticle at a Time", ECE Colloquium, Cornell University, September 2001.
151. "Metal Nanoshells: Manipulating the Flow of Light at the Nanoscale", Photonic Nanostructures Conference, Knowledge Foundation, San Diego, CA, October 2001.
152. "Properties of Metal Nanoshells", 3M Corporation, St. Paul, MN, October 2001.
153. "Metal Nanoshells: Constructing optics "from the dipole up", Interdisciplinary Materials Science Graduate Program Colloquium, Vanderbilt University, Nashville, TN, April 2002.
154. "Nanoshells: Nanotechnology for the Real World", Third Annual St. Olaf Honors Day Science Symposium- "Big Questions, Small Scale Solutions: New Frontiers in Nanoscience", Northfield, Minnesota, May 2002.
155. "From Nanoshells to Nanospectra: a Rice-founded technology", Luncheon for the spouses of the Trustees of Rice University, May 2002.
156. "Tuning optical properties at the Nanoscale", DAMOP May 28<sup>th</sup>-June 1<sup>st</sup>, 2002.
157. "Biophotonic applications of Metal Nanoshells", Gordon Research Conference, "Lasers in Biology and Medicine", July 2002.
158. "The Manipulation of Light one Nanoparticle at a time", ETOPIM Conference, Snowbird, UT, July 2002.
159. "Nanoshells: bio-inspired architectures for multifunctional coatings", ARL/AFRL Meeting on Multifunctional Coatings, Keystone, CO, August 2002.
160. "Nanoshells: a Photonic approach to Nanobiotechnology", Texas Nano-Vivo Summit, Houston, TX, August 2002.
161. "Nanoshells: fabricating nanophotonics 'from the dipole up'", IEEE-Nanophotonics Colloquium, 2<sup>nd</sup> Annual IEEE Conference on Nanotechnology, August, 2002.
162. "Biomedical Applications of Gold Nanoshells", 3<sup>rd</sup> Annual Bio-MEMS Conference, Columbus, OH, September 2002.
163. MURI Site visit, Army Research Laboratory, September 11, 2002.
164. "Plasmonic Hybridization: Design Principles and Realization of Nanophotonic Architectures", Physical Foundations of Quantum Electronics, Snowbird, UT, January 2003.
165. "Plasmonic Hybridization: Design Principles and Realization of Nanophotonic Architectures", Research Seminar, University of Florida, January 2003.
166. "Plasmonic Nanoparticles by Rational Design", University of Georgia, January 2003.
167. "Plasmon hybridization: a Design Principle for the Realization of Practical Nanophotonic Architectures", Georgia Tech, January 2003 .
168. "Plasmon Hybridization: a rational design principle for nanophotonic architectures" Imperial College, UK, February 2003.
169. Third International Conference on Biomimetic Materials Processing, BMMP-3; Nagoya, JP, January 26-30, 2003..
170. "Plasmonics: Rationally Designed Architectures for Optics at the Nanoscale", Visit and Colloquium at Sandia National Laboratory, February 2003.
171. "Plasmonics: Rationally Designed Architectures for Optics at the Nanoscale", Visit and Colloquium at Los Alamos National Laboratory, February 2003.
172. "Plasmonic Hybridization: Design Principles and Realization of Nanophotonic Architectures", Australian Colloid and Interface Science 2003 meeting, Sydney, February 2003.

173. "Nanoshells: using Tunable Plasmons for Nanobiotechnology", Australian Nano-Bio meeting, Melbourne, February 2003.
174. "Plasmonic Nanostructures and their Applications in Biosensing", American Chemical Society meeting, March 2003.
175. "Plasmonic Nanostructures by Rational Design", American Physical Society Meeting, March 2003.
176. "Plasmon Hybridization: a design principle for the realization of practical nanophotonic architectures", James Franck Institute Colloquium, University of Chicago, April 22<sup>nd</sup>, 2003.
177. "Plasmon Nanostructures: Applications in Biotechnology", Vanderbilt Student Invited Pharmacology Speaker, April 24, 2003.
178. University of Texas-Dallas, May 3, 2003 (postponed).
179. Nanotech to Biotech Convergence, May 4-6, 2003 (declined).
180. "Plasmonics: Manipulation of electromagnetic fields at the nanoscale", AFOSR Contractor's meeting, San Diego, CA, May 18-22, 2003.
181. "Nanoshells: an Ideal Nano-Bio Interface for Biomedical Applications", Research Seminar, M. D. Anderson Cancer Center, June 2003.
182. "Photothermal Effects Induced on and by Plasmonic Nanostructures", Gordon Research Conference on Photothermal and Photoacoustic Phenomena, Colby-Sawyer College, NH, June 2003.
183. "Nanoshells: an Ideal Nano-Bio Interface for Biomedical Applications", AAMI Annual Meeting (American Association for Medical Instrumentation), Long Beach, CA, June 15, 2003
184. "Plasmonic Nanostructures by Rational Design", Gordon Research Conference on Electronic Spectroscopy and Dynamics, July 2003.
185. "Plasmonics: an Emerging Optical Nanotechnology", First Annual SPRING meeting, Austin, TX, August 25-27, 2003.
186. "Optimizing Surface Enhanced Raman Scattering with Ag Nanoshells" J. B. Jackson and N. J. Halas, SPIE Conference, San Diego, CA, August 2003.
187. "Plasmonics: manipulating electromagnetic fields at the nanoscale", Duke University, ECE Seminar, September 2003.
188. "The Remarkable Optical Properties of Gold Nanoshells", Gold 2003: Industrial Applications of Gold, International Conference, Vancouver, BC, September 2003.
189. "Tunable Plasmonic Nanostructures: biosensing relevant properties and applications", Biomedical Engineering Society (BMES) Annual Meeting, Nashville, TN, September 2003.
190. "Plasmonics: Nanoscale Manipulation of the Plasmon Response", Progress in Electromagnetic Research Symposium (PIERS2003), Honolulu, Hawaii, October 2003.
191. "Optics at the Nanoscale: Design Principles, Components and Applications", Nanotechnology Symposium, Dartmouth College, November 2003.
192. "Tunable Plasmonic Nanostructures: Fundamental Components for Nano-Optics", Physics of Quantum Electronics 2004, Snowbird, UT, January 2004.
193. "Nanoshells: Tunable plasmonic nanoparticles with applications in biotechnology", Inaugural Meeting of the Texas Academy of Science, Engineering and Medicine (TASEM), San Antonio, TX, January 2004.
194. "Nanophotonics in Silica/Gold Nanoshells", Contemporary Photonics Technology 2004, Tokyo, Japan, January 2004.
195. "Nanoshells: Optical Design at Nanoscale Dimensions", Research Seminar, Nanophotonics Laboratory, Professor Satoshi Kawata, University of Tokyo, Japan, January 2004.
196. SPIE Biophotonics Meeting, "Plasmonic Applications in Biomedicine", (talk declined, Rebekah Drezek suggested as substitute speaker to present nanoshell-related work).
197. "Plasmon Hybridization: a Design Principle for the Realization of Practical Nanophotonic Architectures", Physics Department Colloquium, University of Colorado, January 2004.
198. "Nanoshells: design rules and chemical fabrication of tunable nanophotonic components", Chemistry Department and IGERT Seminar, University of Oregon, February 2004.
199. IEEE Nanoscale Devices and Systems Integration, Orlando, FL, February 2004 (declined due to conflict).
200. "Nanoshells: Fundamental Plasmonic nanocomponents with Real-world Applications" Research Seminar, Zyvex Corp. (televised), Dallas, TX, February 2004.
201. "Nanoshells: Optical Design at Nanoscale Dimensions", Physics Colloquium at Trinity University, San Antonio, TX, February 2004.
202. "Nanoshells: fundamental topologies and design principles for nano-optics", Physics Colloquium, Rice University, Houston, TX, March 2004.



203. PIERS2004 Annual Meeting, Pisa, Italy, March 2004 (talk presented by Glenn Goodrich).
204. "Nanoshells: New tools for manipulating light at the nanoscale", NAE Regional Meeting, Rice University, March 2004.
205. "Nanoshells as Multimodality nanoscale sensors", 2004 ACS National Meeting, Anaheim, CA March, 2004.
206. "Plasmonic Nanoparticles by Rational Design", 2004 ACS National Meeting, Anaheim, CA, March 2004.
207. "Tailoring the near field for enhanced spectroscopies below the diffraction limit", 2004 ACS National Meeting, Anaheim, CA, March 2004.
208. Workshop on Nano-scale Materials: From Science to Technology, Institute of Physics, Bhubaneswar, India during April 5-8, 2004 (declined).
209. "Tailoring nanostructures for enhancing spectroscopies below the diffraction limit", MRS Spring Meeting, San Francisco, CA April 2004.
210. "Rational Design of Plasmonic Nanoarchitectures", MRS Spring Meeting, San Francisco, CA April 2004.
211. "Symmetry Breaking in Synthesis and Post-synthetic Processing of Nanoshells", MRS Spring Meeting, San Francisco, CA April 2004.
212. ACI Nanobiotechnology Conference, San Francisco, CA, April 2004 (declined due to conflict).
213. "Nanoshells: applications of Plasmonic Nanostructures in Biomedicine" NIH/NIAID Workshop, Gaithersburg, MD, June 2004.
214. "Nanoshells: Nanoscale Manipulation of the Plasmon Response", EMRS (European Materials Research Society), Strasbourg, France, May 2004.
215. "Nanoshells: from plasmon physics to cancer therapy", Research Seminar, Chalmers University, Goteborg, Sweden, June 2004.
216. Association of Academic Health Centers, Council on Research and Science, Washington, DC (declined due to conflict).
217. Frontiers in Laser Physics, Trieste, IT, July 14-16, 2004.
218. "Photonics from the Bottom Up: Design Tools for Manipulating Light at the Nano Scale", Chemistry and Physics of Nanostructure Fabrication, Gordon Research Conference, Tilton, NH, July 18-23, 2004.
219. Invited talk, Nanophotonics Conference, Osaka, Japan, July 2004.
220. Invited talk, SPIE Annual Meeting, Denver, CO, August 2004.
221. "Biosensing Applications of Nanoshells", Becton-Dickinson, Inc., Durham, NC, September 2004.
222. "Nanoshells: New tools for manipulating light at the nanoscale", Nanotechnology Workshop, Venice, Italy, September 2004.
223. "Nanoshells: Tunable plasmonic nanostructures and applications", UC Davis, Department of Biomedical Engineering, October 2004 (postponed until 2005).
224. US-Israel Workshop in Nanoscience, Washington, DC, October 2004 (workshop postponed until 2005).
225. "SERS based Nanosensing", Air Force Review Guest Speaker, Wright-Patterson Air Force Base, November 2004.
226. AVS National Meeting, Anaheim, CA, November 2004.
227. IUMRS Meeting, Taiwan, November 2004 (declined due to conflict).
228. "Nanoshells: manipulation of light at nanoscale dimensions" NSF sponsored Nanoscience Symposium in Hong Kong, November 2004.
229. "Plasmons: Manipulation of Light at the Nanoscale", Materials Research Society Annual Fall Meeting, Boston, Mass, November 2004.
230. "Nanoshells in Biomedical Applications", U. T. M. D. Anderson Imaging Physics Research Seminar, Houston, TX, November 2004.
231. "Nanoshells: manipulating light at nanoscale dimensions for biomedicine", University of Texas Center for Biomedical Engineering Annual Conference, Westin, Galleria, Houston, TX, December 2004.
232. "Plasmonic Nanosensors", NSF-NIRT Annual Meeting, National Science Foundation, Washington, DC, December 2004.
233. "Plasmonic Nanodevices", Physics of Quantum Electronics Conference, Snowbird, UT, January 2005.
234. Fifth International Symposium on Biomimetic Materials Processing (BMMP-5), Nagoya University, Nagoya, Japan, January 2005 (declined).
235. "Nanoshells and Quantum Dots"; Featured Speaker, Saturday Night Hot Topics, Photonics West SPIE Meeting, San Jose, CA, January 2005.
236. "Nanoshell-based Raman sensing of biologically relevant molecules and biomaterials", Photonics West SPIE Meeting, San Jose, CA, January 2005.
237. Nanotechnology in Biomedicine, University of Bielefeld, Germany, January 2005 (declined).

238. "Nanoshells in Biomedicine", AIChE Regional Meeting, Beaumont, TX, February 2005.
239. "A Plasmonic Approach to Nanophotonics", Research Colloquium, Boston University, Boston, MA, February 2005.
240. "Nanoshells: manipulation of light at nanoscale dimensions", Harvard/MIT Physical Chemistry Seminar Series, MIT, Cambridge, MA, February 2005.
241. "Nanoshells: optimizing nanophotonic properties for probing living systems", ACS National Meeting, March 2005.
242. "Nanoshells: from plasmon physics to cancer therapy", IBM Almaden Research Colloquium, March 18<sup>th</sup>, 2005.
243. "All-Optical Nanosensors based on 'Controlled SERS'", IEEE NDSI 2005 Meeting, Houston, TX, March 2005.
244. "Nanoengineering Energy Solutions: a 'reductionist' approach", DARPA workshop on Nanopower, March 2005.
245. "Taming SERS with Tunable Plasmons", Chemistry Department, Penn State University, April 2005.
246. "Taming SERS with Tunable Plasmons", DOE Workshop on Single Molecule and Single Particle Spectroscopy, Gaithersburg, MD, April 2005.
247. Invited talk, Foundations of Nanoscience Conference, Snowbird, UT, April 2005 (declined).
248. "Nanoshells: from plasmon physics to cancer therapy", NIST Colloquium Series, April 2005.
249. "Plasmonics: Optics at the Nanoscale", Departmental Colloquium Speaker, Institute of Optics, University of Rochester, April 2005.
250. Invited Speaker, MRS Spring Meeting, April 2005 (two invited talks).
251. Invited Speaker, ICONO-05, St. Petersburg, Russia, May 2005 (declined).
252. Invited Speaker, Symposium in Quebec, May 2005. (cancelled due to illness)
253. "Design and Implementation of a Standalone Raman-based All-optical Nanosensor", Quantum Electronics and Laser Science Conference (QELS), Baltimore, May 2005.
254. "Nanoshells: applying Nanotechnology to harvest light for biomedicine" at "Minds without Borders: Frontiers in Medical Research", Medical Sciences Graduate Student Association, University of Calgary, Calgary, Alberta, Canada, May 2005.
255. "Nanoshells: Seamless Integration of Cancer Imaging and Therapy", Era of Hope Conference, Philadelphia, PA, June 2005.
256. "Plasmon Hybridization: mesoscopic quantum analogs of atomic and molecular systems", Gordon Research Conference on Atomic and Molecular Physics, June 2005.
257. "Plasmon Hybridization: manipulating electromagnetic fields with mesoscale structures", MSS-12, Albuquerque, NM, July 2005.
258. "SERS-active Substrates by Rational Computational Design", DARPA MTO Workshop, San Francisco, CA, July 2005.
259. "Nanophotonics: harnessing light at the nanoscale", Nano Summit, Houston, TX, July 2005.
260. "Nanophotonics and Plasmon Hybridization: manipulating optical fields with nanoscale structures", Gordon Research Conference on Nanoparticles and Nanocrystals, Connecticut College, July 2005.
261. "The role of nanoscale roughness on the optical properties of plasmon resonant nanoparticles", SPIE Annual Meeting, San Diego, CA, August 2005.
262. "Nanoengineered Plasmonic Substrates for Surface Enhanced Spectroscopies", ICAVS-3 Third International Conference on Advanced Vibrational Spectroscopy, Delavan, WI, August 2005.
263. "Introduction to Nanophotonics", CNST Lecture Series, Rice University, September 2005.
264. "Plasmonics: Optics at the Nanoscale", Invited Seminar, University of Bath, UK (postponed due to Hurricane Rita until 2006).
265. Invited Seminar, Cancer Workshop, Oxford, UK. (postponed due to Hurricane Rita until 2006).
266. "Plasmonics: Nanoengineering Substrates for Surface Enhanced Spectroscopies", Invited Seminar, Department of Chemistry, University of Glasgow, Scotland, UK (postponed due to Hurricane Rita until 2006).
267. "Plasmonics: Fundamental excitations in mesoscale geometries and designing substrates for surface enhanced spectroscopies", University of California, Davis, October 2005.
268. Invited speaker: Civic Forum on the Societal Implications of Nanotechnology, Austin, TX, October 2005.
269. Invited seminar: Stanford University, November 2005.
270. "Plasmonics: Optics at the Nanoscale", NSF sponsored US-Egypt Workshop on Nanostructured Materials and Nanotechnology, Alexandria, Egypt, November 2005.
271. "Plasmonic Nanostructures for Surface Enhanced Raman Scattering: Comparing geometries and field enhancement" MRS meeting, Boston, MA, November 2005.
272. "Plasmonics: Optical Nanostructures by Rational Design", ECE Seminar, University of Texas at Austin, January 2006.

273. "Nanoshells: from plasmon physics to cancer therapy", Distinguished Speaker Series, Center for Nano and Molecular Science and Technology, University of Texas, February 2005.
274. "Nanoshells: from Plasmon physics to cancer therapy", Invited speaker series, Department of Chemistry, University of Utah, February 13, 2006.
275. "A Plasmonic platform for nanoscale chemical sensing", Gordon Research Conference on Bioanalytical Sensors, Monterey, CA, March 2006.
276. "Designing Nanotools for Biomedicine", 28<sup>th</sup> Annual Symposium of the Burnham Institute, La Jolla, CA, April 2006.
277. Invited speaker, ECE Department, University of Wisconsin, Madison, WI, April 2006 (declined).
278. "Beyond Drugs, Cancer, and Fear: The promise of nanotechnology in biomedicine", Perspectives on the Future of Science and Technology Conference, U. S. Department of State sponsorship, Lake Como, IT, May 2006.
279. "Taking the (Nano) device approach: applications of nanotechnology in the diagnosis and treatment of cancer and other diseases," Gordon Research Conference in Molecular Therapeutics of Cancer, Oxford, UK, July 2006.
280. "Plasmonic Nanostructures: artificial molecules enabling nanoscale spectroscopies and nanophotonics-based biomedical applications," Gordon Research Conference in Plasmonics – Optics at the Nanoscale, Keene, NH, July 2006.
281. "Plasmonic Nanostructures: artificial molecules enabling nanoscale spectroscopies and nanoparticle-based biomedical applications", Invited talk, European Union Research Training Network HYTEC, Annual Meeting, Heraklion, Crete, July 2006.
282. "Tunable plasmonic nanostructures for improving near-field optics, sensing, diagnostics," SPIE (Society for Photo-optical Instrumentation Engineers) Annual Meeting, San Diego, CA, August 2006.
283. "An all-optical SERS-based pH nanosensor," SPIE (Society for Photo-optical Instrumentation Engineers) Annual Meeting, San Diego, CA, August 2006.
284. "The Plasmonics approach: engineered nanostructures for rationally optimized surface enhanced spectroscopy substrates", Colloquium, Edgewood Chem and Bio Center, Aberdeen Proving Ground, Aberdeen, MD, August 2006.
285. "Plasmonic Nanostructures: artificial molecules enabling nanoscale spectroscopies and nanoparticle-based biomedical applications", Nano 2006 Conference, San Sebastian, Spain, September 2006.
286. "Plasmonic Nanoparticles: Molecular Orbitals writ large", Chemistry Department Colloquium, Case Western Reserve University, Cleveland, OH, September 2006.
287. "Plasmonic Nanostructures: molecular orbitals writ large" and "Nanoengineered Plasmonic substrates for surface enhanced spectroscopies", Annual Nanowire Symposium, Division of Solid State Physics and the Nanometer Consortium, Lund University, Sweden, October 2006.
288. "When plasmons interact, worlds collide", Kirkpatrick Lecture, Illinois Institute of Technology, Chicago, IL, September 2006.
289. "Plasmon Hybridization: molecular orbitals writ large", Physical Chemistry Seminar, U. C. Berkeley, October 2006.
290. A Nanoscale all-optical pH meter", IEEE-LEOS Annual Meeting, Montreal, Canada, November 2006.
291. "Plasmonics", Ecole Polytechnique de Montreal, Montreal, CA, November 2006.
292. "Taming surface enhanced spectroscopies with tailored plasmonic nanoparticle substrates", Chemistry Research Seminar, University of California, Santa Barbara October 2006.
293. "Plasmonic Nanoparticles: Molecular Orbitals writ large" ECE Departmental Seminar, Georgia Tech, Atlanta GA, November 2006.
294. "Plasmonic Nanoparticles: Molecular Orbitals writ large" Invited talk, Chemistry Department, Georgia Tech, Atlanta, GA, November 2006.
295. Invited talk, MRS Annual Meeting, November 2006.
296. "Plasmonic Nanostructures: Molecular Orbitals writ large" Invited talk, Nanoscience Speaker Series, University of Pittsburgh, December 2006.
297. "Plasmonics: Optics at the Nanoscale", Invited talk, Argonne National Laboratory, December 2006.
298. "Plasmonic Design" Invited talk, Physics of Quantum Electronics Conference, Snowbird, UT, January 2007.
299. "Nanophotonics: the next Big Thing", Invited talk, CINT Annual Workshop, Los Alamos National Laboratory/Sandia National Laboratory.
300. "Plasmonic Nanoparticles: Molecular Orbitals writ large" Invited talk, University of Utah, February 2007.
301. "Plasmonic coupling and nanophotonics" Invited speaker, ICAM Workshop, Santa Fe, NM March 2007.
302. "Nanophotonics: from Plasmon Physics to Cancer Therapy" Invited talk, TAMEST meeting, Austin, TX, April 2007.

303. "Plasmonic Nanoparticles: Molecular Orbitals writ large" Invited talk, Physics Department, University of Pittsburgh, April 2007.
304. "Plasmonic Nanomaterials: Enabling Solutions in Pursuit of Challenges" Invited talk, Fundamentals of Nanoscience Conference, Snowbird, UT, April 2007.
305. "An Enabling Technology for Nanoscience and Defense Applications" Invited talk, "Nanotechnology for Defense Applications", San Diego, April 2007.
306. "Plasmonic Nanoparticles: Molecular Orbitals writ large" Invited talk, University of California Davis, Applied Physics Department, April 2007.
307. "Plasmon-based Nanoparticle Probes for Multifunctional Diagnostics and Therapeutics" Invited talk, Spring MRS meeting, San Francisco, CA, April 2007.
308. Invited talk, Spring MRS meeting, San Francisco, CA, April 2007.
309. Invited talk, Plasmonics Workshop, University of Beijing, May 2007 (declined).
310. Invited Lecturer, Paris Summer School on Nanotechnology, June 2007.
311. "Nanoengineered Photonics and Plasmonics" Invited Lecturer, French Summer School on Nanobiotechnology, Pourquerolles, France, June 2007.
312. Invited talk, Gordon Research Conference on Chemistry of Electronic Materials, Mt. Holyoke, MA, July 2007.
313. "Nanoshells: a gift in a gold wrapper", Scandinavian Network of Women Physicists, Lyngby, Denmark, August 2007.
314. "Combining surface enhanced vibrational spectroscopies on the same plasmonic substrate", ACS Meeting, Boston, MA, August 2007.
315. "Plasmon-based Nanoparticle Probes for Multifunctional Diagnostics and Therapeutics" Invited talk, SPIE Annual Meeting, San Diego, CA, August 2007.
316. Invited talk, SPIE Annual Meeting, San Diego, CA, August 2007 (declined in lieu of multiple student presentations).
317. "Plasmonic Nanostructures: Molecular Orbitals writ large", Physical Chemistry Seminar, Penn State University, September 2007.
318. "Nanophotonics: from plasmon physics to cancer therapy", invited lecture, Chinese Academy of Sciences, Beijing, China, September 2007.
319. "Designing Plasmonic Substrates for enhancing vibrational spectroscopies", Invited talk, 35<sup>th</sup> International Conference on Spectroscopy, Xiamen, China, September 2007.
320. "Nanoshells: from plasmon physics to cancer therapy", Seminar, Department of Materials Science and Engineering, Johns Hopkins University, October 3, 2007.
321. "Plasmonic Nanoparticle complexes for Diagnostics and Therapeutics", Invited talk, AVS Annual Meeting, Seattle, WA, October 2007.
322. "Plasmonics: New Strategies for Biomedicine and Human Health Applications", DARPA DFSC Plasmonics Workshop, November 2007.
323. "The plasmonic nanoparticle-molecule interface", Invited talk, NSF-Brazil Workshop, Sao Paulo, Brazil, November 2007.
324. "Plexcitonic Nanoparticle Complexes and Assemblies", Invited talk, Fall MRS meeting, Boston, MA, November 2007.
325. "Plasmonics: merging nanoparticles and light", Chemistry seminar, University of New Orleans, November 2007.
326. "Plasmonic Nanoparticles: artificial molecules with real applications", Invited Colloquium, Division of Engineering and Applied Sciences, Harvard University, December 2007.
327. "Nanoshells: merging nanoparticles with light for Biomedicine", Plasmonique en Biologie et en Médecine, Paris, France, December 2007.
328. "Plasmonics: biomedical applications of the "hot" metal-molecule interface" PQE 2008, Snowbird, UT, January 6-10, 2008.
329. Physical Chemistry Seminar, Texas A&M University, February 5, 2008 (cancelled).
330. "Plasmonic Nanoparticles: Molecular Orbitals writ large", Physics Colloquium, Indiana University, February 2008.
331. "Plasmonic Nanoparticles: artificial molecules with real applications", Physics Colloquium, Yale University, February 2008.
332. "Cancer Nanotechnology: *Capabilities, opportunities, and challenges*", NCI workshop, Washington, DC, February 2008.
333. "Plasmonics: merging nanoparticles with light", Departmental Colloquium, Materials Science and Engineering, MIT, February 2008.

334. "Plasmonics for biosensing", Spring ACS meeting, April 2008.
335. "Label-free surface-enhanced spectroscopic detection of biomolecules and biomolecular interactions", Invited talk, Pittcon 2008, New Orleans, LA, March 2-7, 2008.
336. "Spectral reproducibility in SERS: a new detection modality for biomolecular sensing", Invited talk, Pittcon 2008, New Orleans, LA, March 2-7, 2008.
337. "Playing with Plasmons: Nano-optical approaches for molecular sensing and actuating", Yale University, April 1, 2008.
338. "Plasmonic Nanostructure-molecule complexes: interactions, actuation, and in situ spectroscopy", Spring MRS meeting, San Francisco, March 2008.
339. "Plasmonics: merging nanoparticles with light for Biosensing", University of Twente, Netherlands, April 2008.
340. "Functional Plasmonics at the nanoscale and bio-applications", Air Force Workshop, San Francisco, CA, April 2008.
341. "Plasmonics: Merging Nanoparticles with Light", AMOLF, University of Amsterdam, Netherlands, April 2008.
342. "Playing with Plasmons: Nano-optical approaches for molecular sensing and actuating", China-Sweden Collaborative Conference, Beijing, China, April 2008.
343. "Plasmonics: merging nanoparticles with light - for biomedical applications", China-Sweden Collaborative Conference, Beijing, China, April 2008.
344. "Plasmonics-based design: Combining Surface-Enhanced Raman and IR spectroscopies on the same substrate", CLEO meeting, San Jose, CA, May 2008.
345. "Plasmonic Nanoparticles: Artificial Molecules, Real Applications", Physical Chemistry Seminar, UCLA, May 19<sup>th</sup>, 2008.
346. "Nanoplasmonic-molecule complexes for probing and changing molecular properties", AFOSR Contractor's Meeting, Arlington, VA, May 2008.
347. "Plasmonic Nanoparticles: Artificial Molecules, Real Applications", Invited talk, Santander Summer School Santander, Spain, June 2008.
348. "Nanoplasmonics: Sensing and actuating at molecular dimensions", Gordon Research Conference, Nanofabrication, Tilton, NH, July 2008.
349. "When plasmons interact, worlds collide: science and applications at the "hot" metal-molecule interface", Gordon Research Conference, Electronic Processes in Organic Materials, July 20-25, Mount Holyoke, MA.
350. "Introduction to Plasmonics", Harvard University Physics Department, July 2008.
351. "Biosensing using surface enhanced spectroscopies: molecular level probes of biomolecular processes", Invited talk, SPIE Plasmonics, San Diego, CA, August 2008.
352. "Harnessing the Photothermal Response of plasmonic nanostructures for actuation applications: expanding options in cancer therapy", SPIE Bioimaging, San Diego, CA, August 2008.
353. "Plasmonics: expanding the capabilities of near field optics to molecular dimensions", Frontiers of Near-Field Optics, Buenos Aires, Argentina, September 2-5, 2008.
354. "Plasmonic Nanoparticles: artificial molecules with real applications", ISSPIC XIV, Valladolid, Spain, September 14-19, 2008.
355. "Plasmonics for Cancer Therapy", Pfizer, Oslo, Norway, September 2008.
356. "Combining SERS and SEIRA", Invited talk, Federation of Analytical Chemistry and Spectroscopy Societies Meeting, Reno, Nevada, September 28-October 2, 2008.
357. "Plasmonics: Merging Nanoparticles with Light", Invited talk, NanoTX, Dallas, TX, October 2008
358. "Plasmonic Sensing", Invited talk, Plasmonics and Metamaterials, (held in conjunction with Frontiers in Optics), Rochester, NY, October 2008.
359. "When Plasmons interact, worlds collide: optics at the nano-bio interface", Invited talk and NBIC Research Excellence Award Acceptance Lecture, University of Pennsylvania, October 2008.
360. "Plasmonics: merging nanoparticles with light", Physics Colloquium, Drexel University, Philadelphia, PA October 30, 2008.
361. "Plasmonics: Sensing, actuating and responding at the nanoscale- by design", Invited talk, AFRL workshop, Washington, DC, November 2008.
362. "Oriented Au Nanocups: 3D nanoantennas with Electric, magnetic, and coupled magnetic-magnetic plasmon resonances", Invited talk, Nano-Meta Conference, Seefeldt, Austria, January 2009.
363. "When plasmons interact, worlds collide: the emerging field of Nanophotonics", NSF Distinguished Lecture Series, National Science Foundation, February 23rd 2009.
364. "Nanocups: light-manipulating plasmonic nanostructures and nanosystems", Invited talk, Spring MRS Meeting, San Francisco, CA, March 2009.

365. "Plexcitonics: Plasmon enhanced fluorescence spectroscopy and coherent effects", Invited talk, Special seminar in Nano-Optics, Center for Molecular and Nanoscience, UT Austin, April 2009.
366. "Using nanotechnology to harvest light for biomedicine", OSA Regional Meeting, Pittsburgh, PA, April 2009.
367. "Light-manipulating properties of reduced symmetry plasmonic nanostructures and nanosystems", Nanophotonics Workshop, Chinese Academy of Sciences, Beijing, China, June 2009.
368. "Nanophotonics in biomedicine: new approaches to diagnostics and therapeutics", Nanophotonics Workshop, Chinese Academy of Sciences, Taiyuan, China, June 2009.
369. "When plasmons interact, worlds collide: the emerging field of Nanophotonics", Institute for Microelectronics (IME) Singapore, July 2009.
370. "New routes to reduced-symmetry plasmonics", SPIE Annual Meeting, San Diego, CA, August, 2009.
371. DOE LANL Energy Frontiers Research Center Kickoff Meeting, Los Alamos, NM, August 2009.
372. "Direct optical detection of aptamer conformational changes induced by target analytes", ACS Meeting, Washington, DC, August 2009.
373. "Symmetry Breaking in plasmonic nanostructures: new properties driving new synthetic opportunities", ACS Meeting, Washington, DC, August 2009.
374. "Plasmonic nanoparticles: artificial molecules, real applications", Seoul National University, August 2009.
375. "Plasmonics: merging nanoparticles with light", KNOS2009, Seoul, Korea, August 2009.
376. "Plasmonics: artificial molecules, real applications", University of Korea, Seoul, Korea, August 2009.
377. "Plasmonic Nanomedicine: opportunities in merging diagnostics with therapeutics for cancer eradication", China Nano, September 2009.
378. "When plasmons interact, worlds collide: the emerging field of nanophotonics", Nanophysics and Device division lecture series, inaugural lecture, Institute of Physics, Chinese Academy of Sciences, Beijing, China, September 2009.
379. "Plasmonic Nanomedicine: multimodal diagnostics merged with drug-free therapeutics", Nanomedicine Conference, Stockholm, Sweden, September 2009.
380. "Nanomedicine and Light: towards drug-free cancer therapy", House of Representatives Research and Development Caucus, Washington, DC, December 2009.
381. "The 'optical diode' response in plasmonic heterodimer nanoparticle complexes", MRS Meeting, Boston, November, 2009.
382. "Electro- and magnetoinductive properties of reduced symmetry metallodielectric nanoparticles", MRS Meeting, Boston, November, 2009.
383. "Nanoscale biomedical plasmonics: multimodality theranostic complexes and light-controlled gene delivery", MRS Meeting, Boston, November, 2009.
384. "Light-based nanomedicine for cancer: merging diagnostics and drug-free therapeutics", French American Innovation Day, Boston, MA, December 2009.
385. PQE Meeting, Snowbird, UT, January, 2010.
386. Telluride Workshop, Telluride, CO, February 2010.
387. Invited talk, PITTCO, Orlando, FL, February 2010 (declined).
388. META'10, Cairo, Egypt, Feb. 22-25, 2010 (declined).
389. Invited talk, APS March Meeting, Portland, OR, March 2010.
390. Combining Multiple Functions in Single Optically Responsive Nanoparticles for Theranostics, Materials Research Society Spring Meeting, San Francisco, CA, April 2010.
391. Invited speaker, ETH Functionalized plasmonic nanostructures for biosensing conference Lago Maggiore, Switzerland, April 2010 (cancelled due to flight cancellations due to Iceland Volcano)
392. Invited talk, Experimental Biology 2010 Symposium, American Physiological Society, Anaheim, CA, April 2010 (declined)
393. "Plasmonics and metamaterials for optical, fluorescent and medical effects: from nanospheres and -shells to nanocups, Fanoshells and hybrid systems", L'Oreal Corporation Research Division, May 2010.
394. Inventor of the Year Award Acceptance Presentation, State Bar of Texas, Fort Worth, TX, June 2010.
395. Merging Nanoparticles with Light", Gordon Research Conference on Inorganic Chemistry, University of New England, Biddeford, Maine, June 2010.
396. Invited talk, SPIE Conference, San Diego, CA, August 2010.
397. "Coherence-based Nanoplasmonics for Chemical and Biomolecular Detection and Spectroscopy", ICORS Meeting, Boston, August 2010.
398. Invited talk, Gordon Research Conference on Bioimaging and Drug Delivery, August 2010 (given by Amit Joshi)

399. Invited talk, IVC-18 Meeting, Beijing, China, August 2010.
400. University Seminar, National University of Dalian, Dalian, China, September 2010.
401. Invited talk, Frontiers in Plasmonics Workshop, Xi'an, China, September 2010.
402. Invited talk, Notre Dame Chemistry Department, South Bend, IN, October 2010 (declined).
403. "Surface-enhanced spectroscopies of biomolecules", Invited talk, FACSS Meeting, Research Triangle Park, NC, October 2010 (in honor of Martin Moskovits).
404. NSF Breast Cancer Workshop, University of Arkansas, October 2010.
405. Invited talk, Nanotechnology meeting, Moscow, Russia, November 2010 (declined).
406. Office of Naval Research Basic Research Challenges Kickoff Meeting, November 2010, La Jolla, CA, November 2010.
407. Invited talk, MRS Fall Meeting, Boston, MA, November 2010.
408. Invited talk (SERS) Pacifichem 2010, Honolulu, HI, December 2010.
409. Invited talk (Coherent Plasmonics), Pacifichem 2010, Honolulu, HI, December 2010.
410. NanoMETA Conference, Seefeld, Austria, January 2011.
411. Kavli Symposium "There's plenty of room in the middle: nanotechnology and the next fifty years", Caltech, January, 2011
412. "Plasmonics: nanoscale manipulation of light(I)", ITRC, Taipei, Taiwan, February 2011.
413. "Plasmonics: nanoscale manipulation of light(II)", National Taiwan University, February 2011.
414. "Plasmonics: nanoscale manipulation of light(III)", Research Center for Applied Sciences, Taiwanese National Academy of Sciences, Taipei, Taiwan, February 2011.
415. "Plasmons and DNA: Label-free sensing and nanoscale actuation", PIERS Meeting session on Nanobiophotonics, Marrakesh, Morocco, March 2011.
416. University of Colorado Research Colloquium, April, 2011 (declined).
417. QELS, May, 2011 (declined).
418. "Functional Plasmonic Systems", SPP5, Busan, Korea, May 2011.
419. Light for Health, ICFO, Barcelona, Spain, May 2011 (declined).
420. "Plasmonic Nanostructures in Energy and Environmental Applications", NanoPlasmonics for Energy and the Environment Workshop, Vigo, Spain, June 2011.
421. "Adventures in Plasmonics", "Summer School" Seminar, AMOLF, Amsterdam, Netherlands, June 2011.
422. "Multifunctional plasmonic nanoparticles for biomedical theranostics and intracellular chemistry", Cellular Nanosciences Meeting, U. of Heidelberg, Germany, July 2011.
423. "Plasmonics for energy: research progress", EFRC Annual Meeting, Los Alamos, NM, August, 2011.
424. "Parabolic Nanoantennas", Invited talk, SPIE annual meeting, San Diego, CA, August, 2011.
425. "Plasmonic nanoparticles inside cells: light-induced molecular release", ACS National Meeting, Denver, CO, August 2011.
426. "Plasmon-based interactions with J-aggregate excitons: plexcitonics", ACS National Meeting, Denver, CO, August 2011.
427. "Frontiers in Biologically-oriented nanosensing and nanoactuation", Nanoplasmonics Symposium, Chalmers University, Goteborg, Sweden, September, 2011.
428. "Theranostic Nanoshells for Imaging and Treatment of Cancer", Invited talk, NCI Annual Meeting, Washington, DC, September 2011.
429. "Plasmon-based interactions with J-aggregate excitons: plexcitonics", Invited talk, MRS annual meeting, Boston, MA, November 2011.
430. "Plasmonics: from 20<sup>th</sup> Century Physics to 21<sup>st</sup> Century Applications", Karlsruhe, December 2011.
431. "Designing and Deconstructing the Fano Lineshape in Plasmonic Nanoclusters", PQE 42, Snowbird, UT, January 5-9, 2012.
432. "Plasmon-enhanced Biosensing", LACSEA Meeting Feb 1-3, 2012, San Diego, CA.
433. "Nanoscale manipulation of light: new physical insights and technological opportunities", LSU, February 23, 2012.
434. "Coherent plasmonic and plexcitonic complexes: Lineshape engineering "from the bottom up", ACS Spring Meeting, March 25-29, 2012, San Diego, CA.
435. "Plasmon-based media for solar energy harvesting", ACS Spring Meeting, March 25-29, 2012, San Diego, CA.
436. "Plasmonic nanosystems: realizing the Alzar model, exploiting optical frequency magnetism, and generating solar steam", Frontiers in Plasmonics, Chengdu, China, April 2012.
437. Photothermally activated therapeutics", Meta-'12, Paris, France, April 2012.

438. "Nanoscale Manipulation of Light: New physical insights and technological opportunities", Materials Science Department Seminar, Carnegie-Mellon University, May 2012.
439. "Solar steam-and the biggest energy challenge you never heard of", Frontiers in Optics Workshop, Purdue University, June 2012.
440. "Solar steam- and the biggest energy challenge you never heard of", Gordon Research Conference, Plasmonics, Colby College, ME, June 2012
441. "Plasmonics: nanoscale manipulation of light- *new physical insights and technological opportunities*", IPHT, Jena, Germany, July 2012.
442. "Coherent Plasmonics: A route to active, responsive materials", MPI-Dresden workshop, July 2012.
443. "Graphene Plasmonics", SPIE Annual meeting, San Diego, CA, August 2012 (presented by Dr. Zheyu Fang).
444. "Shining light on Nanomedicine", ACS Annual Meeting, Philadelphia, PA, August 2012.
445. "Coherent Plasmonics: routes to seeing, sensing, and switching", annual meeting, Stanford Photonics Research Center, Stanford University, September 2012.
446. "Innovation Fallout", Scientia Lecture, Rice University, September 2012.
447. "Plasmonics for the People: useful Applications", Engineering Colloquium, University of Victoria, Canada, November 2012.
448. "Nanoparticle-enabled liquid-vapor phase transitions", PQE Conference, Snowbird, UT, January 2013
449. "Light-driven theranostics: targeting pancreatic cancer", MRS Spring Meeting, San Francisco, CA, April 2013.
450. "Extending plasmonic media into the UV and IR: aluminum and graphene", MRS Spring Meeting, San Francisco, CA, April 2013.
451. "Solar Steam Generation using nanoparticles", ACS Spring Meeting, New Orleans, LA, April 2013.
452. "Coherent Plasmonics: strategies for active, responsive metamaterials", Frontiers of Plasmonics Workshop Taipei, Taiwan, April 30, 2013.
453. "Plasmonics: new materials, effects, and applications", Frontiers of Plasmonics Workshop, Wuhan, China, May 3, 2013.
454. "Plasmonic routes to new effects, devices, and applications", Hangzhou, China, May 2013.
455. "Frontiers of Plasmonics: new materials, interactions, and applications", Hong Kong Summer School of Electromagnetics, City University of Hong Kong, Hong Kong, China, May 2013.
456. "Plasmon-enhanced spectroscopies: back to the future", Canadian Chemistry Conference, Special Symposium in honor of Martin Moskovits, Quebec City, Quebec, CA, May 27, 2013.
457. "Coherent Plasmonics", Gordon Research Conference in Atomic Physics, Salve Regina College, Providence, Rhode Island, June 23-28 2013.
458. "Graphene, Hybrid Optoelectronics and Voltage-gated Plasmonics", PIERS meeting, Stockholm, Sweden, August 2013.
459. "Mediating between Light and Charge in Plasmonic metamaterials", PIERS meeting, Stockholm, Sweden, August 2013.
460. "SEIRA spectroscopy using nanoantennas tuned to chemical moieties", PIERS meeting, Stockholm, Sweden, August 2013.
461. "Light-induced liquid-vapor phase transitions: solar steam generation using nanoparticles", SPIE Meeting, San Diego, CA, August 2013.
462. "Advances in plasmonic sensing: new mechanisms for increasing chemical sensitivities", SPIE Meeting, San Diego, CA, August 2013
463. "Plasmonics: nanoparticles putting light to work", Hanyang University, Ansan, Korea, September 2013.
464. "Plasmonics: nanoparticles putting light to work", Dasan Conference, Seoul, Korea, September 2013.
465. "Plasmonics: nanoparticles putting light to work", Seoul National University, Seoul, Korea, September 2013.
466. "Nanoscale manipulation of light: physical insights and technological opportunities", Physics Colloquium, Ohio State University, October 2013.
467. "Nanoscale manipulation of light: new physical insights and technological opportunities", Mostafa El-Sayed Symposium, Regional ACS Meeting, Atlanta, GA, November 2013.
468. "Plasmonics: Optics at the nanoscale", Invited talk, Naval Research Laboratory, February 2014.
469. "Coherent Plasmonics", March APS Meeting, Isakson Award Seminar, March 2014.
470. "Plasmon-enabled processes: new opportunities in chemical science and emerging technologies", U. C. Berkeley Physical Chemistry Seminar, March 2014.
471. "Plasmon Enhanced Light harvesting", ACS Meeting, March 2014.
472. "Plasmon Induced Chemistry, ACS Meeting, March 2014.



473. "Nanoparticle-based Solar Steam Generation and Applications", Frontiers in Plasmonics Conference, Xiamen, China, March 2014.
474. "Coherent Plasmonics", Colloquium, Physics Department, Peking University, Beijing, China, March 2014.
475. "Coherent Plasmonics: Optimized for Sensing and Energy Transfer", CLEO invited talk, June 2014.
476. "Preclinical Platform for Theranostic Nanoparticles in Pancreatic Cancer, NCI Alliance for Nanotechnology in Cancer Annual Meeting, October 2014.
477. "Aluminum Plasmonics", SPIE Photonics Asia, Beijing, China, October 2014.
478. "Aluminum Plasmonics", Plasmonics Workshop, Sun-Yat Sen University, Guangzhou, China, October 2014.
479. "Harvesting Light at the Nanoscale: Useful Applications", Sun-Yat Sen University, Guangzhou, China, October 2014 (popular lecture for undergraduate and graduate students).
480. "Aluminum Plasmonics", MRS Fall Meeting, Boston, MA, December 2014.
481. "Molecular Plasmonics", PQE-2015, Snowbird, UT, January 2015.
482. "Solar Steam", GRC on Microscale and Nanoscale phase change heat transfer, Hotel Galvez, Galveston, TX, January 2015.
483. "Molecular Plasmonics", TAMU Symposium, January 2015.
484. "Theranostic Nanoparticles: merging imaging and therapeutics", AACR Workshop, San Diego, CA, February 2015.
485. "Solar Steam Generation: Principles and Applications", Nanomaterials for Applications in Energy Technology, Gordon Research Conference, Ventura Beach, CA, February 2015.
486. SERS for OMICS, Pittcon, New Orleans, LA, March 2015.
487. Wuhan University, International Center for Quantum Photonics, First International Conference, March 2015.
488. Wuhan University, Physics Colloquium, March 2015.
489. "Coherent Plasmonics for ultrasensitive and single molecule sensing", ACS Meeting, Denver, CO, March 2015.
490. "Plasmon-based hot carrier photocatalysis", ACS Meeting, Denver, CO, March 2015.
491. "Your anion is my plasmonic nanostructure: discovering molecular plasmonics", ACS Meeting, Denver, CO, March 2015.
492. "Surface-enhanced spectroscopies by rational nanoantenna design", ACS Meeting, Denver, CO, March 2015.
493. "Aluminum Plasmonics", Spring MRS Meeting, April 2015.
494. Physics Colloquium, Harvard University, April 2015 (declined).
495. "Plasmon-enabled processes: new opportunities in cross-cutting science and emerging technologies", Physics Colloquium, UT Austin, April 2015.
496. "Sustainable plasmonics", Nanophotonics Summer School, Monte Verita, Ascona, Switzerland, September 2015.
497. MRS Meeting, Boston, December 2015.
498. "Aluminum Plasmonics for Surface-enhanced Spectroscopies", Pacificchem meeting (Invited talk I), December 2015.
499. "Plasmon-induced Hot Carrier Photocatalysis", Pacificchem meeting (Invited talk II), December 2015.
500. "Plasmonic Processes in Biomedicine", Distinguished Lecture Series, Yonsei University, Seoul, Korea, January 2016.
501. "Plasmonics for Sustainability", Distinguished Lecture Series, Seoul National University, Seoul, Korea, January 2016.
502. "Aluminum Plasmonics", Distinguished Lecture Series, KRICT, Daejeon, Korea, January 2016.
503. "Plasmonics: from Noble Metals to Sustainability", Distinguished Speaker Series, University of Miami College of Engineering, February 2016.
504. "Sustainable Plasmonics and Plasmonics for Sustainability", ACS Spring Meeting, Symposium in honor of Mostafa El-Sayed's Priestly Medal, March 2016.
505. "Sustainable Plasmonics", MRS Spring Meeting, April 2016.
506. "Sustainable Plasmonics and Plasmonics for Sustainability", Frontiers in Plasmonics, Hefei, China, April 2016.
507. "Sustainable Plasmonics and Plasmonics for Sustainability", The Wuhan-Lund Workshop on Nanoscience and Technology 2016, Wuhan University, April 2016.
508. "Coherent Phenomena in Plasmonics, Nonlinear Processes in Plasmonics, and Sustainable Plasmonics, Ecole de Physique, Attophys meets Plasmonics, Les Houches, France, May 2016.
509. Gordon Research Conference in Plasmonics and Nanophotonics, Sunday River Ski Resort, Bethel, ME, July 2016.
510. Centre for Disruptive Photonic Technologies, Nanyang Technical University, Singapore, July 2016.
511. A\*STAR Data Storage Institute, Singapore, July 2016.

