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Mark T. Swihart

Curriculum Vitae

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EDUCATION AND EMPLOYMENT

University at Buffalo, State University of New York, Buffalo, NY

Professor, Chemical and Biological Engineering, August 2008-present

Associate Professor, Chemical and Biological Engineering, August 2004-August 2008

Assistant Professor, Chemical and Biological Engineering, August 1998-August 2004

Research Topics: Synthesis and applications of nanoparticulate materials; Nanoparticle nucleation and growth; Laser pyrolysis for kinetic studies and nanoparticle synthesis; Experimental and theoretical studies of elementary reactions important for vapor phase materials synthesis; Detailed chemical kinetics, fluid dynamics, and aerosol dynamics in high temperature vapor phase materials processing; Applied computational quantum chemistry.

University of Minnesota, Minneapolis, MN

Post-Doctoral Research Associate, Mechanical Engineering, August 1997-August 1998

Research Topics: Experimental and modeling studies of particle nucleation, growth and transport in silicon CVD; Modeling of r.f. plasma CVD of oriented diamond films.

Advisors: Steven L. Girshick, Peter H. McMurry, Stephen A. Campbell

University of Minnesota, Minneapolis, MN

Ph.D., Chemical Engineering, July, 1997

Fields of Study: Reaction Engineering, Chemical Kinetics, Mathematical Modeling, Reactive Flows, Chemical Vapor Deposition Processing.

Advisor: Robert W. Carr

Dissertation Title: Gas Phase Chemical Kinetics and the Detailed Modeling of Chemical Vapor Deposition Processes

Rice University, Houston, TX

B.S., Chemical Engineering, *Summa Cum Laude*, May, 1992

HONORS AND AWARDS

The Jacob F. Schoellkopf Medal of the Western New York section of the American Chemical Society, 2013.

Department of Chemical and Biological Engineering Outstanding Professor Award, 2003, 2008, 2011, and 2012, determined by nomination and vote of undergraduates in the department.

Sustained Achievement Award for research excellence, The University at Buffalo (SUNY), 2010.

Kenneth T. Whitby Award from the American Association for Aerosol Research, 2007. This award is presented to one individual annually and "recognizes outstanding technical contributions to aerosol science and technology by a young scientist".

Summer Research Scholar Faculty Mentor Award from the University at Buffalo Collegiate Science and Technology Entry Program and Louis Stokes Alliance for Minority Participation Program, 2007, 2012.

Outstanding McNair Faculty Mentor from the University at Buffalo Ronald E. McNair Post-Baccalaureate Achievement Program, 2006.

Licensed Innovation Award from the Research Foundation of SUNY, 2005.

J.B. Wagner Young Investigator Award of the High Temperature Materials Division of the Electrochemical Society, 2003. This is an international award presented to only one person every two years.

Promising Inventor Award from the Research Foundation of SUNY, 2003.

Doctoral Dissertation Fellowship, University of Minnesota, 1995-96

National Science Foundation Fellowship, 1992-95

PUBLICATIONS

I. Publications in Refereed Journals:

** indicates corresponding author(s)*

1) Tang, Z., J.P. Palafox-Hernandez, W.-C. Law, Z.E. Hughes, M.T. Swihart, P.N. Prasad*, M.R. Knecht*, and T.R. Walsh*, "Biomolecular Recognition Principles for Bionanocombinatorics: An Integrated Approach To Elucidate Enthalpic and Entropic Factors", *ACS Nano*, article ASAP, published online (2013). DOI: 10.1021/nn404427y

2) Oh, H.S., G.S. He, W.-C. Law, A. Baev, H. Jee, X. Liu, A. Urbas, C.-W. Lee, B.L. Choi, M.T. Swihart, and P.N. Prasad*, "Manipulating Nanoscale Interactions in a Polymer Nanocomposite for Chiral Control of Linear and Nonlinear Optical Functions", *Advanced Materials*, accepted (2013).

3) Lin, T., X. Zhang, J. Xu*, X. Liu, M.T. Swihart, L. Xu, and K. Chen "Strong energy-transfer-induced enhancement of Er^{3+} luminescence in In_2O_3 nanocrystal codoped silica films", *Applied Physics Letters*, **103**, 181906 (2013).

4) Liu, X., Y. Li, B. Zhou, D. Wang, A.N. Cartwright, and M.T. Swihart*, "Formation of IV-VI Alloy Nanocrystals for Application in Solution-Processed Optoelectronic Devices: The Case of $Pb_{1-x}Sn_xS$", *Chemistry of Materials*, **25**, 4409–4415 (2013).

5) Liu, X., X. Wang, and M.T. Swihart*, "$Cu_{2-x}S_{1-y}Se_y$ Alloy Nanocrystals with Broadly Tunable Near-Infrared Localized Surface Plasmon Resonance", *Chemistry of Materials*, **25**, 4402–4408 (2013).

6) Vidal, X., W.J. Kim, A. Baev, V. Tokar, H. Jee, M.T. Swihart, P.N. Prasad*, "Coupled Plasmons Induce Broadband Circular Dichroism in Patternable Films of Silver Nanoparticles with Chiral Ligands", *Nanoscale*, **5**, 10550–10555 (2013).

7) Liu, X., C. Lee, W.C. Law, D. Zhu, M. Liu, M. Jeon, J. Kim, P.N. Prasad*, C. Kim*, M.T. Swihart*, "Au-Cu_{2-x}Se Heterodimer Nanoparticles with Broad Localized Surface Plasmon Resonance as Contrast Agents for Deep Tissue Imaging", *Nano Letters*, **13**, 4333–4339 (2013).

8) Scharmach, W.J., M.K. Sharma, R.D. Buchner, V. Papavassiliou, G.N. Vajani, M.T. Swihart*, "Amorphous carbon encapsulation of metal aerosol nanoparticles for improved collection and prevention of oxidation" *AIChE Journal*, **59**, 4116–4123 (2013).

9) Liu, M., W.-C. Law, A. Kopwitthaya, X. Liu, M.T. Swihart, and P.N. Prasad*, "Exploring Amphiphilicity of PEGylated Gold Nanorods: Mechanical Phase Transfer and Self-Assembly", *Chemical Communications*, **49**, 9350-9352 (2013).

10) Erogbogbo, F., J. May, M.T. Swihart, P.N. Prasad, K. Smart, S. El Jack, D. Korcyk, M. Webster, R. Stewart, I. Zeng, M. Jullig, K. Bakeev, M. Jamieson, .N Kasabov, B. Gopalan, L. Liang, R. Hu, S. Schliebs, S. Villas-Boas, P. Gladding*, "Bioengineering Silicon Quantum Dot Theranostics using a Network Analysis of Metabolomic and Proteomic Data in Cardiac Ischemia", *Theranostics*, **3**, 719-728 (2013).

11) Liu, Xin, and M.T. Swihart*, "A general single-pot heating method for morphology, size and luminescence-controllable synthesis of colloidal ZnO nanocrystals" Nanoscale, **5**, 8029-8036 (2013).

12) Park, J.J., D.Y. Kim, S.S. Latthe, J.G. Lee, M.T. Swihart, S.S. Yoon*, "Thermally-Induced Superhydrophilicity in TiO_2 Films Prepared by Supersonic Aerosol Deposition", ACS Applied Materials & Interfaces, **5**, 6155–6160 (2013).

13) Liu, J., F. Erogbogbo, K.-T. Yong*, L. Ye*, J. Liu, R. Hu, H. Chen, Y. Hu, Y. Yang, J. Yang, I. Roy, N.A. Karker, M.T. Swihart, and P.N. Prasad*, "Assessing Clinical Prospects of Silicon Quantum Dots: Studies in Mice and Monkeys", *ACS Nano*, **7**, 7303–7310 (2013).

14) Sharma, M.K., R.D. Buchner, W.J. Scharmach, V. Papavassiliou, and M.T. Swihart*, "Creating Conductive Copper-Silver Bimetallic Nanostructured Coatings using a High

Temperature Reducing Jet Aerosol Reactor", *Aerosol Science and Technology*, **47**, 858-866 (2013).

15) He, X., R. Dziak, X.Yuan, K. Mao, R. Genco, M. Swihart, D. Sarkar, C. Li, C. Wang, L. Lu, S. Andreadis, and S. Yang*, "BMP2 Genetically Engineered MSCs and EPCs Promote Vascularized Bone Regeneration in Rat Critical-Sized Calvarial Bone Defects," *PLOS One*, **4**, e60473, doi:10.1371/journal.pone.0060473 (2013).

16) Liu, X., W.-C. Law, M. Jeon, X. Wang, M. Liu, C. Kim*, P.N. Prasad*, and M.T. Swihart*, "$Cu_{2-x}Se$ Nanocrystals with Localized Surface Plasmon Resonance as Sensitive Contrast Agents for *In Vivo* Photoacoustic Imaging: Demonstration of Sentinel Lymph Node Mapping," *Advanced Healthcare Materials*, **2**, 952-957 (2013).

17) Erogbogbo, F., T. Lin, P.M. Tucciarone, K.M. LaJoie, L. Lai, G.D. Patki, P.N. Prasad*, and M.T. Swihart*, "On-Demand Hydrogen Generation using Nanosilicon: Splitting Water without Light, Heat, or Electricity", *Nano Letters*, **13**, 451-456, (2013).

18) Yong*, K.-T., W.-C. Law, R. Hu, L. Ye, L. Liu, M.T. Swihart, and P.N. Prasad*, "Nanotoxicity assessment of quantum dots: from cellular to primate studies", *Chem. Soc. Rev.* **42**, 1236-1250 (2013).

19) Liu, S., G. Chen, T.Y. Ohulchanskyy, M.T. Swihart*, and P.N. Prasad*, "Facile Synthesis and Potential Bioimaging Applications of Hybrid Upconverting and Plasmonic $NaGdF_4$: Yb^{3+}, Er^{3+}/Silica/Gold Nanoparticles", *Theranostics*, **3**, 275-281 (2013).

20) Liu, X., X. Wang, B. Zhou, W.-C. Law, A.N. Cartwright, and M.T. Swihart*, "Size-Controlled Synthesis of $Cu_{2-x}E$ (E = S, Se) Nanocrystals with Strong Tunable Near-Infrared Localized Surface Plasmon Resonance and High Conductivity in Thin Films", *Advanced Functional Materials*, **23**, 1256-1264, (2013).

21) He, X., R. Dziak, K. Mao, R. Genco, M. Swihart, C. Li, and S. Yang*, "Integration of a novel injectable nano calcium sulfate/alginate scaffold and BMP2-gene modified MSCs for bone regeneration", *Tissue Engineering*, **19**, 508-518, (2013).

22) He*, G.S., W.-C. Law, A. Baev, S. Liu, M.T. Swihart, and P.N. Prasad, "Nonlinear optical absorption and stimulated Mie scattering in metallic nanoparticle suspensions", *J. Chem. Phys.*, **138** 024202 (2013).

23) Erogbogbo, F., X. Liu, J.L. May, A. Narain, M.T. Swihart, and P.N. Prasad*, "Plasmonic gold and luminescent silicon nanoplatforms for multimode imaging of cancer cells", *Integrative Biology*, **5,** 144-150 (2013).

24) Yong, K.-T. and M.T. Swihart*, "In vivo toxicity of quantum dots: no cause for concern?" (editorial), *Nanomedicine*, **7**, 1641-1643 (2012).

25) Yong*, K.-T., Y. Wang, I. Roy, R. Hu, M.T. Swihart, W.-C. Law, S.K. Kwak, L. Ye, J. Liu, S.D. Mahajan, and J.L. Reynolds, "Preparation of Quantum Dot/Drug Nanoparticle Formulations for Traceable Targeted Delivery and Therapy", *Theranostics*, **2**, 681-694 (2012).

26) Erogbogbo, F., C.-W. Chang, J.L. May, L. Liu, R. Kumar, W.-C. Law, H. Ding, K.-T. Yong, I. Roy, M. Sheshadri, M.T. Swihart and P.N. Prasad*, "Bioconjugation of luminescent silicon quantum dots to gadolinium ions for bioimaging applications" *Nanoscale*, **4** 5483-5489 (2012).

27) Oh, H.S., H. Jee, A. Baev, M.T. Swihart*, and P.N. Prasad*, "Dramatic Structural Enhancement of Chirality in Photopatternable Nanocomposites of Chiral Poly(fluorene-alt-benzothiadiazole) (PFBT) in Achiral SU-8 Photoresist", *Advanced Functional Materials*, **22** 5074-5080 (2012).

28) Erogbogbo, F., C.-W. Chang, J.L. May, P.N. Prasad and M.T. Swihart*, "Energy transfer from a dye donor to enhance the luminescence of silicon quantum dots", *Nanoscale*, **4**, 5163-5168 (2012).

29) May, J.L., F. Erogbogbo, K.-T. Yong, H. Ding, W.-C. Law, M.T. Swihart, P.N. Prasad*, "Enhancing silicon quantum dot uptake by pancreatic cancer cells via pluronic® encapsulation and antibody targeting", *Journal of Solid Tumors*, **2**, 24-37 (2012).

30) Ye*, L., K.-T. Yong*, L. Liu, I. Roy, R. Hu, J. Zhu, H. Cai, W.-C. Law, J. Liu, K. Wang, J. Liu, Y. Liu, Y. Hu, X. Zhang, M.T. Swihart, and P.N. Prasad*, "A pilot study in non-human primates shows no adverse response to intravenous injection of quantum dots", *Nature Nanotechnology*, **7**, 453–458 (2012).

31) Chen, G., T.Y. Ohulchanskyy, S. Liu, W.-C. Law, F. Wu, M.T. Swihart, H. Ågren, and P.N. Prasad*, "Core/Shell $NaGdF_4:Nd^{3+}/NaGdF_4$ Nanocrystals with Efficient Near-Infrared to Near-Infrared Downconversion Photoluminescence for Bioimaging Applications", *ACS Nano*, **6**, 2969-2977 (2012).

32) Kim, S., K. Jeon, J.C. Lee, M.T. Swihart, and M. Yang*, "Enhanced Performance of a Polymer Solar Cell upon Addition of Free-Standing, Freshly Etched, Photoluminescent Silicon Nanocrystals", *Appl. Phys. Exp.*, **5** 022302 (2012).

33) Erogbogbo, F., T. Liu, N. Ramadurai, P. Tuccarione, L. Lai, M.T. Swihart*, and P.N. Prasad*, "Creating Ligand-Free Silicon Germanium Alloy Nanocrystal Inks", *ACS Nano*, **5** 7950-7959 (2011).

34) Liu, S., G. Chen, P.N. Prasad, and M.T. Swihart*, "Synthesis of Monodisperse Au, Ag, and Au–Ag Alloy Nanoparticles with Tunable Size and Surface Plasmon Resonance Frequency," *Chem. Mater.*, **23** 4098-4101 (2011).

35) Park, Y.-B., K. Mohan, A.Al-Sanousi, B. Almaghrabi, R.J. Genco, M.T. Swihart, and R. Dziak*, "Synthesis and Characterization of Nanocrystalline Calcium Sulfate for Use in Osseous Regeneration," *Biomedical Materials*, **6** 055003 (2011).

36) Erogbogbo, F., C.-A. Tien, C.-W.Chang, K.-T. Yong, W.-C. Law H. Ding, I. Roy, M.T. Swihart*, and P.N. Prasad*, "Bioconjugation of Luminescent Silicon Quantum Dots for Selective Uptake by Cancer Cells", *Bioconjugate Chemistry*, **22** 1081-1088 (2011).

37) Antipov, A., M. Bell, M. Yasar, V. Mitin*, W. Scharmach, M. Swihart, A. Verevkin, and A. Sergeev, "Luminescence of colloidal CdSe/ZnS nanoparticles: high sensitivity to solvent phase transitions", *Nanoscale Research Letters*, **6** 142 (2011).

38) Kim, W.-J., X. Vidal, A. Baev, H.S. Jee, M.T. Swihart, and P.N. Prasad*, "Photothermal-reaction-assisted two-photon lithography of silver nanocrystals capped with thermally cleavable ligands", *Applied Physics Letters*, **98** 133110 (2011).

39) Shukla, S., X. Vidal, E.P. Furlani, M.T. Swihart, K.-T. Kim, Y.-K. Yoon, A. Urbas, and P.N. Prasad*, "Subwavelength Direct Laser Patterning of Conductive Gold Nanostructures by Simultaneous Photopolymerization and Photoreduction", *ACS Nano*, **5** 1947–1957 (2011).

40) Yong*, K.-T., W.-C. Law, I. Roy, Z. Jing, H. Huang, M.T. Swihart, and P.N. Prasad*, "Aqueous phase synthesis of CdTe quantum dots for biophotonics" *Journal of Biophotonics*, **4**(1-2) 9 (2011).

41) Erogbogbo, F., K.-T. Yong, I. Roy, R. Hu, W.-C. Law, W. Zhao, H. Ding, F. Wu, R. Kumar, M.T. Swihart*, and P.N. Prasad*, "In Vivo Targeted Cancer Imaging, Sentinel Lymph Node Mapping and Multi-Channel Imaging with Biocompatible Silicon Nanocrystals" *ACS Nano*, **5**(1), 413–423 (2011).

42) Oh, H.S., S. Liu, H.S. Jee, A. Baev, M.T. Swihart, and P.N. Prasad* "Chiral Poly(fluorene-alt-benzothiadiazole) (PFBT) and Nanocomposites with Gold Nanoparticles: Plasmonically and Structurally Enhanced Chirality", *Journal of the American Chemical Society*, **132**(49) 17346–17348 (2010).

43) Scharmach, W.J., R.D. Buchner, V. Papavassiliou, P. Pacouloute, and M.T. Swihart*, "A High-Temperature Reducing Jet Reactor for Flame-Based Metal Nanoparticle Production", *Aerosol Science and Technology*, **44**(12), 1083-1088 (2010).

44) Erogbogbo, F., K.-T. Yong, R. Hu, W.-C. Law, H. Ding, C.-W. Chang, P.N. Prasad*, and M.T. Swihart*, "Biocompatible Magnetofluorescent Probes: Luminescent Silicon Quantum Dots Coupled with Superparamagnetic Iron(III) Oxide", *ACS Nano*, **4**, 5131-5138 (2010).

45) Shukla, S., E.P. Furlani, X. Vidal, M.T. Swihart, and P.N. Prasad*, "Two-Photon Lithography of Sub-Wavelength Metallic Structures in a Polymer Matrix", *Advanced Materials*, **22**, 3695-3699 (2010).

46) Rinkevicius, Z., J. Autschbach, A. Baev, M.T. Swihart, H. Ågren, and P.N. Prasad*, "Novel Pathways for Enhancing Nonlinearity of Organics Utilizing Metal Clusters", *Journal of Physical Chemistry A*, **114**, 7590-7594 (2010).

47) Zhu, J., K.-T. Yong*, I. Roy, R. Hu, H. Ding, M.T. Swihart, G.S. He, Y. Cui*, and P.N. Prasad*, "Additive controlled synthesis of gold nanorods (GNRs) for two-photon luminescence imaging of cancer cells", *Nanotechnology*, **21**, 285106 (2010).

48) Liu, S., H. Zhang and M.T. Swihart*, "Spray pyrolysis synthesis of ZnS nanoparticles from a single-source precursor", *Nanotechnology*, **20**, 235603 (2009).

49) Hsiao, V.K.S., K.-T. Yong, A.N. Cartwright*, M.T. Swihart, P.N. Prasad, P.F. Lloyd and T.J. Bunning, "Nanoporous polymeric photonic crystals by emulsion holography", *Journal of Materials Chemistry*, **19**, 3998-4003 (2009).

50) K.-T. Yong, I. Roy, M.T. Swihart and P.N. Prasad, "Multifunctional nanoparticles as biocompatible targeted probes for human cancer diagnosis and therapy", *Journal of Materials Chemistry*, **19**, 4655-4672 (2009).

51) Yong, K.-T., M.T. Swihart*, H. Ding and P.N. Prasad, "Preparation of Gold Nanoparticles and their Applications in Anisotropic Nanoparticle Synthesis and Bioimaging", *Plasmonics*, **4**, 79-93 (2009).

52) Gupta, A., M.T. Swihart*, and H. Wiggers*, "Luminescent Colloidal Dispersions of Silicon Quantum Dots from Microwave Plasma Synthesis: Exploring the Photoluminescence Behavior across the Visible Spectrum" *Advanced Functional Materials*, **19**, 696-703 (2009). Also featured on the front cover, *Advanced Functional Materials*, **19**(5) (2009).

53) Dang, H. and M.T. Swihart*, "Computational Modeling of Silicon Nanoparticle Synthesis: II. A two dimensional bivariate model for silicon nanoparticle synthesis in a laser-driven reactor including finite-rate coalescence", *Aerosol Science and Technology*, **43**, 554-569 (2009).

54) Dang, H. and M.T. Swihart*, "Computational Modeling of Silicon Nanoparticle Synthesis: I. A General Two-Dimensional Model", *Aerosol Science and Technology*, **43**, 250–263 (2009).

55) He, S, H. Zhang, S. Delikanli, Y. Qin, M.T. Swihart, and H. Zeng*, "Bifunctional Magneto-Optical FePt-CdS Hybrid Nanoparticles" *Journal of Physical Chemistry C*, **113**, 87-90 (2009).

56) Zhang, H., S. Delikanli, Y. Qin, S. He, M. Swihart, and H. Zeng*, "Synthesis of Monodisperse CdS Nanorods Catalyzed by Au Nanoparticles", *Nano Research*, **1**, 314-320 (2008).

57) Delikanli, S., S. He, Y. Qin, P. Zhang, H. Zeng*, H. Zhang, and M. Swihart, "Room temperature ferromagnetism in Mn-doped CdS nanorods", *Applied Physics Letters*, **93**, 132501 (2008).

58) Osmont, A., M. Yahyaoui, L. Catoire*, I. Gökalp, and M.T. Swihart, "Thermochemistry of C–O, (CO)–O, and (CO)–C bond breaking in fatty acid methyl esters", *Combustion and Flame*, **155**, 334-342 (2008).

59) He*, G.S., Q. Zheng, K.-T. Yong, F. Erogbogbo, M.T. Swihart, and P.N. Prasad, "Two- and Three-Photon Absorption and Frequency Upconverted Emission of Silicon Quantum Dots", *Nano Letters*, **8**, 2688-2692 (2008).

60) Erogbogbo, F., K.-T. Yong, I. Roy, G. Xu, P.N. Prasad, and M.T. Swihart*, "Biocompatible Luminescent Silicon Quantum Dots for Imaging of Cancer Cells", *ACS Nano*, **2**, 873-878 (2008).

61) Osmont, A., L. Catoire*, T.M. Klapötke, G.L. Vaghjiani, and M.T. Swihart, "Thermochemistry of Species Potentially Formed During NTO/MMH Hypergolic Ignition", *Propellents, Explosives, Pyrotechnics*, **33**, 209-212 (2008).

62) Yong, K.-T., I. Roy, H.E. Pudavar, E.J. Bergey, K.M. Tramposch, M.T. Swihart, P.N. Prasad*, "Multiplex Imaging of Pancreatic Cancer Cells by Using Functionalized Quantum Rods", *Advanced Materials*, **20**, 1412-1418 (2008).

63) Yong, K-T., Y. Sahoo, M.T. Swihart, P.M. Schneeberger, and P.N. Prasad*, "Templated Synthesis of Gold Nanorods (NRs): The Effects of Cosurfactants and Electrolytes on the Shape and Optical Properties", *Topics in Catalysis*, **47**, 49-60 (2008).

64) Kim, S.J., V.P. Chodavarapu, A.N. Cartwright*, M.T. Swihart and T.J. Bunning, "Enhanced Oxygen Detection using Porous Polymeric Gratings with Integrated Recognition Elements", *Sensors and Actuators B*, **130**, 758–764 (2008).

65) Tereshchuk*, P.L., Z.M. Khakimov, F.T. Umarova, and M.T. Swihart, "Energetically competitive growth patterns of silicon clusters: Quasi-one-dimensional clusters versus diamond-like clusters", *Physical Review B*, **76**, 125418 (2007).

66) Yong, K.-T., Y. Sahoo, H. Zeng, M.T. Swihart*, J.R. Minter, and P.N. Prasad*, "Formation of ZnTe Nanowires by Oriented Attachment", *Chemistry of Materials*, **19**, 4108-4110 (2007).

67) Osmont, A., L. Catoire*, I. Gökalp, and M.T. Swihart, "Thermochemistry of C-C and C-H bond breaking in fatty acid methyl esters", *Energy & Fuels*, **21**, 2027-2032 (2007).

68) Yong, K.-T., Y. Sahoo, M.T. Swihart*, and P.N. Prasad, "Shape Control of CdS Nanocrystals in One Pot Synthesis", *Journal of Physical Chemistry C*, **111**, 2447-2458 (2007).

69) Yong, K.-T., J. Qian, I. Roy, H.H. Lee, E.J. Bergey, K.M. Tramposch, S. He, M.T. Swihart, A. Maitra, and P.N. Prasad*, "Quantum Rod Bioconjugates as Targeted Probes for Confocal and Two-Photon Fluorescence Imaging of Cancer Cells", *Nano Letters*, **7**, 761-765 (2007).

70) Zhang, H. and M.T. Swihart*, "Synthesis of Tellurium Dioxide Nanoparticles by Spray Pyrolysis", *Chemistry of Materials*, **19**, 1290-1301 (2007).

71) Yong, K.-T., Y. Sahoo, K.R. Choudhury, M.T. Swihart*, J.R. Minter and P.N. Prasad*, "Control of the Morphology and Size of PbS Nanowires using Gold Nanoparticles", *Chemistry of Materials*, **18**, 5965-5972 (2006).

72) Sato, S. and M.T. Swihart*, "Propionic acid terminated silicon nanoparticles: Synthesis and optical characterization", *Chemistry of Materials*, **18**, 4083-4088 (2006).

73) Yong, K.-T., Y. Sahoo, M.T. Swihart*, and P.N. Prasad*, "Growth of CdSe Quantum Rods and Multipods Seeded by Noble Metal Nanoparticles", *Advanced Materials*, **18**, 1978-1982 (2006).

74) Shi, W., Y. Sahoo, H. Zeng*, Y. Ding, M.T. Swihart*, and P.N. Prasad*, "Anisotropic Growth of PbSe Nanocrystals on Au-Fe_3O_4 Hybrid Nanoparticles", *Advanced Materials*, **18**, 1889-1894 (2006), also featured on the inside front cover, *Advanced Materials*, **18** (14), July 18, 2006.

75) Yong, K.-T., Y. Sahoo, M.T. Swihart*, and P.N. Prasad, "Synthesis and Plasmonic Properties of Silver and Gold Nanoshells on Polystyrene Cores of Different Size and of Gold-Silver Core-Shell Nanostructures", *Colloids and Surfaces A*, **290**, 89-105 (2006).

76) Shi, W., H. Zeng*, Y. Sahoo, T. Ohulchanskyy, Y. Ding, Z.L. Wang, M.T. Swihart*, and P.N. Prasad*, "A General Approach to Binary and Ternary Hybrid Nanocrystals", *Nano Letters*, **6**, 875-881 (2006). *Highlighted in Science Magazine's Editor's Choice: Highlights of the Recent Literature column. Science*, **311**, 1675 (March 24, 2006).

77) Yong, K.-T., Y. Sahoo, K.R. Chaudhury, M.T. Swihart*, J.R. Minter, and P.N. Prasad*, "Shape Control of PbSe Nanocrystals Using Noble Metal Seed Particles", *Nano Letters*, **6**, 709-714 (2006).

78) Hua, F., F. Erogbogbo, M.T. Swihart, and E. Ruckenstein*, "Organically capped silicon nanoparticles with blue photoluminescence prepared by hydrosilylation followed by oxidation", *Langmuir*, **22**, 4363-4370 (2006).

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80) Sahoo, Y., Y. He, M.T. Swihart, S. Wang, H. Luo, E.P. Furlani, and P.N. Prasad*, "An aerosol-mediated magnetic colloid: Study of nickel nanoparticles", *Journal of Applied Physics*, **98**, 054308 (2005).

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V. Invited Presentations

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2) Swihart, M.T., "The Production and Use of Semiconductor Nanocrystals for Optical Bioimaging", Southwest University, Chongqing, China, October 22, 2013.

3) Liu, X., X. Wang, T. Lin, Y. Li, C. Li, B. Zhou, A.N. Cartwright, and M.T. Swihart, "Semiconductor Nanocrystals Based on Non-Toxic Earth-Abundant Elements for Optoelectronics", Peking University, Beijing, China, September 27, 2013.

4) Liu, X., X. Wang, T. Lin, Y. Li, C. Li, B. Zhou, A.N. Cartwright, and M.T. Swihart, "Semiconductor Nanocrystals Based on Non-Toxic Earth-Abundant Elements for Optoelectronics", International Union of Materials Research Societies (IUMRS) International Conference on Advanced Materials, Qingdao, China, September 24, 2013.

5) Sharma, M.K., W.J. Scharmach, R.D. Buchner, D. Qi, V. Papavassiliou, and M.T. Swihart, "Scalable Flame-Based Synthesis of Multicomponent Metal Nanoparticles", 9th World Congress of Chemical Engineering, Seoul, Korea, August 21, 2013.

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VI. Patents and Pending Patent Applications

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4) Li, X., Y. He, and M.T. Swihart, “Process for Producing Luminescent Silicon Nanoparticles”, U.S. Patent No. 7,371,666 (2008).

5) Becker, C.L., J.R. Lattner, and M.T. Swihart, “Fluidized Bed Reactor and Process”, U.S. Patent No. 6,627,068 (2003).

6) Becker, C.L., J.R. Lattner, and M.T. Swihart, “Fluidized Bed Reactor and Process for Producing 5-Ethylidene-2-Norbornene”, U.S. Patent No. 6,294,707 (2001).

ORGANIZATIONAL MEMBERSHIPS

Member, The Electrochemical Society (ECS), American Institute of Chemical Engineers (AIChE), The American Association for the Advancement of Science (AAAS), The American Chemical Society (ACS), The American Association for Aerosol Research (AAAR), The Materials Research Society (MRS), Tau Beta Pi, Phi Beta Kappa, and Sigma Xi

UNIVERSITY AND PROFESSIONAL SERVICE

I. Professional and Public Service

Manuscript reviewer for *Science, Nature, Nature Communications, Advanced Materials, Journal of the American Chemical Society, Nano Letters, Advanced Functional Materials, Chemistry of Materials, Small, Langmuir, The Journal of Physical Chemistry (A, B, and C), Bioconjugate Chemistry, Applied Physics Letters, Industrial and Engineering Chemistry Research, AIChE Journal, Chemistry: An Asian Journal, The Journal of Chemical Physics, The Journal of the Electrochemical Society*, *The Journal of Materials Science, Chemical Vapor Deposition, The International Journal of Chemical Kinetics, The Journal of Crystal Growth, Crystal Growth and Design, CrystEngComm, The Journal of Computational Chemistry, Journal de Physique IV*, *The Journal of Aerosol Science*, *Aerosol Science and Technology*, *The Journal of Nanoparticle Research, Surface Science, The Journal of Applied Physics, Applied Physics Letters, Physica E, The Journal of Nanophotonics, The Journal of Thermal Spray Technology*, *The International Journal of Chemical Reaction Engineering, The Journal of Colloid and Interface Science, Colloids and Surfaces A, Colloids and Surfaces B, Applied Catalysis B, Ceramics International,* and *Applied Physics A.*

Proposal reviewer/panelist for The U.S. National Science Foundation, the U.S. Department of Energy, the ACS Petroleum Research Fund, The Air Force Office of Scientific Research, The Swiss Federal Institute of Technology (ETH), the Dutch Technology Foundation (STW), AXA Research Fund, King Abdulaziz City for Science and Technology (KACST), and The U.S. Civilian Research and Development Foundation.

Conference Chair, 2016 Annual Meeting of the American Association for Aerosol Research, to be held in Portland, Oregon (4-year commitment from 2014 through 2017 meetings, in a series of roles ending with "past-chair").

Member of the Organizing Committee and Proceedings Editor for CVD-XVII/EUROCVD 17 held in October 2009 in Vienna Austria, in conjunction with the 216th meeting of the Electrochemical Society.

Lead organizer and proceedings editor for 'The Third International Symposium on Fundamental Gas-Phase and Surface Chemistry of Vapor-Phase Materials Processing', held at the 209th Meeting of The Electrochemical Society, May 2006, Denver, Colorado.

Member of the Organizing Committee for CVD-XVI/EUROCVD 14, held April 28-May 3, 2003 in Paris, France, in conjunction with the 203rd meeting of the Electrochemical Society.

Lead organizer and proceedings editor for 'The Second International Symposium on Fundamental Gas-Phase and Surface Chemistry of Vapor-Phase Materials Processing', held at the Electrochemical Society National Meeting, March 2001, Washington, D.C.

Member of the Executive Committee of the High Temperature Materials division of the Electrochemical Society, 1999-2013.

Member of the Editorial Advisory Board of the *International Journal of Chemical Kinetics*, 2001-2004.

Member of the Editorial Advisory Board of *Aerosol Science and Technology*, 2008-2010.

Member of the Board of Consulting Editors, *AIChE Journal*, 2012-present.

Editor, *Aerosol Science and Technology*, 2010-present.

II. University Service

Co-Director, New York State Center of Excellence in Materials Informatics (2012-present)

Director, UB2020 Strategic Strength in Integrated Nanostructured Systems (August 2007-present)

Director of Graduate Studies for Chemical and Biological Engineering (2003-2007, 2011-present)

Member of the A.A. Schomburg Fellowship selection committee (2006-present)

Chair of Departmental Safety Committee (2001-2004)

Member of Departmental Undergraduate Studies Committee (2000-2003)

AIChE Student Chapter Advisor (1998-2005)

Freshman Engineering Mentor (1998-2009)

Freshman Honors Program Mentor (1998-present)

University Library Committee Representative (1998-2005)

Departmental Research Open House Organizing Committee (1998-2003)

Lead organizer of the "Workshop on Multifunctional Nanomaterials and Nanodevices" held May 18-19, 2007 at The University at Buffalo (SUNY).

Co-organizer of a workshop entitled "Nanotechnology for Detection and Manipulation of Single Molecules", held May 30, 2003 at UB

Deputy Director, Materials Division, The Institute for Lasers, Photonics, and Biophotonics (2002-present).

FORMAL TEACHING ACTIVITIES

Fall 2013:

Instructor, CE 456/556, Introduction to Aerosol Science and Technology, University at Buffalo, (3 credits, enrollment: 37 students).

- Taught this dual-listed undergraduate/graduate course for the fourth time.

Spring 2012:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 75 students).

- Had full responsibility for required, core undergraduate course in chemical engineering thermodynamics.

Fall 2012:

Instructor, CE 456/556, Introduction to Aerosol Science and Technology, University at Buffalo, (3 credits, enrollment: 16 students).

- Taught this dual-listed undergraduate/graduate course for the fourth time.

Spring 2012:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 72 students).

Co-Instructor, CE 407, Separation Processes, University at Buffalo, (3 credits, enrollment 65 students).

- Taught the second half of the course, covering batch distillation, liquid-liquid extraction, membrane separation, and related material.

Spring 2011:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 62 students).

Fall 2010:

Instructor, CE 456/556, Introduction to Aerosol Science and Technology, University at Buffalo, (3 credits, enrollment: 20 students).

Spring 2010:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 55 students).

Fall 2009:

Instructor, CE 561, Applied Chemical Kinetics, University at Buffalo, (5 credits, enrollment: 38 students).

- Had full responsibility for required, core graduate course in chemical kinetics and reaction engineering.

Spring 2009:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 47 students).

Fall 2008:

Instructor, CE 561, Applied Chemical Kinetics, University at Buffalo, (4 credits, enrollment: 22 students).

Spring 2008:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 47 students).

Fall 2007:

Instructor, CE 561, Applied Chemical Kinetics, University at Buffalo, (4 credits, enrollment: 27 students).

Spring 2007:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 35 students).

Fall 2006:

Instructor, CE 561, Applied Chemical Kinetics, University at Buffalo, (4 credits, enrollment: 20 students).

Spring 2006:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 44 students).

Spring 2005:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 46 students).

- Had full responsibility for required, core undergraduate course in chemical engineering thermodynamics.
- Introduced, in collaboration with David Kofke and staff from the Center for Technical Communications, a major technical writing assignment based on a 'virtual experiment' carried out using molecular simulations.

Instructor, CE 456/556, Introduction to Aerosol Science and Technology, University at Buffalo, (3 credits, enrollment: 20 students).

- Taught this dual-listed undergraduate/graduate course for the second time. It was previously offered as CE412/512 (a special topics course number) as described below.

Fall 2004:

Advisor, CE 406 SWI, AIChE Student Chapter 'Chem-E-Car Competition', University at Buffalo, (3 credits, enrollment: 16 students).

Spring 2004:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 61 students).

- Had full responsibility for required, core undergraduate course in chemical engineering thermodynamics.

- Developed course web page including typed course notes, almost 200 additional pages of solved problems, and various other resources.

- Actively used the course web page and various computer demonstrations during lectures, which were given in a 'technology' classroom with computer projection facilities.

Instructor, CE 512, Chemically Reacting Flows, University at Buffalo, (3 credits, enrollment: 6 students).

- Developed an entirely new elective course at the advanced graduate level.

Fall 2003:

Instructor, CE 561, Applied Chemical Kinetics, University at Buffalo, (4 credits, enrollment: 18 students).

- Had full responsibility for required, core graduate course in chemical kinetics and reaction engineering.

- Developed (from 1998-2003) new course notes, incorporating microscopic views of kinetics and modern computer-based methods of analysis for both chemical kinetics and detailed modeling of complex reactors.

- Developed (from 1998-2003) course web page including over 300 typed pages of course notes, almost 200 additional pages of solved problems, and various other resources.

- Actively used the course web page and various computer demonstrations during lectures, which were given in a 'technology' classroom with computer projection facilities.

Advisor, CE 406 SWI, AIChE Student Chapter 'Chem-E-Car Competition, University at Buffalo, (3 credits, enrollment: 11 students).

Spring 2003:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 39 students).

Instructor, CE 412/512, Introduction to Aerosol Science and Technology, University at Buffalo, (3 credits, enrollment: 30 students).

- Developed an entirely new elective course at the senior undergraduate/first-year graduate level.

- Developed course web page including typed course notes, solved problems, and various other resources.

- Brought the entire class to my research laboratory for a demonstration of modern aerosol science instrumentation, and also gave several simpler in-class demonstrations.

Fall 2002:

Instructor, CE 561, Applied Chemical Kinetics, University at Buffalo, (4 credits, enrollment: 15 students).

Advisor, CE 406 SWI, AIChE Student Chapter 'Chem-E-Car Competition, University at Buffalo, (3 credits, enrollment: 7 students).

Spring 2002:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 47 students).

Fall 2001:

Instructor, CE 561, Applied Chemical Kinetics, University at Buffalo, (4 credits, enrollment: 21 students).

Spring 2001:

Instructor, CE 328, Chemical Engineering Laboratory II, University at Buffalo, (1 credit, enrollment: 50 students).

- Re-structured laboratory experiments to include computer-aided data acquisition using graphical programming in the LabView data acquisition environment.
- Developed and applied a rubric-based assessment system for measuring student performance.

Fall 2000:

Instructor, CE 561, Applied Chemical Kinetics, University at Buffalo, (4 credits, enrollment: 10 students).

Spring 2000:

Instructor, CE 328, Chemical Engineering Laboratory II, University at Buffalo, (1 credit, enrollment: 38 students).

Advisor, CE 406 SWI, AIChE Student Chapter Team Competition, University at Buffalo, (3 credits, enrollment: 20 students).

Instructor, CE 502 SWI, Introduction to Matlab and Maple for Scientific Problem Solving, University at Buffalo, (1 credit, enrollment: 6 students).

Fall 1999:

Instructor, CE 561, Applied Chemical Kinetics, University at Buffalo, (4 credits, enrollment: 20 students).

Spring 1999:

Instructor, CE 328, Chemical Engineering Laboratory II, University at Buffalo, (1 credit, enrollment: 52 students).

Advisor, CE 406 SWI, AIChE Student Chapter Environmental Design Contest, University at Buffalo, (3 credits, enrollment: 13 students).

Instructor, CE 502 SWI, Introduction to Matlab and Maple for Scientific Problem Solving, University at Buffalo, (1 credit, enrollment: 7 students).

Fall 1998:

Instructor, CE 561, Applied Chemical Kinetics, University at Buffalo, (4 credits, enrollment: 22 students).

STUDENTS ADVISED

Former Graduate Students:

Xuegeng Li, Ph.D. conferred February 2004. Currently VP, Manufacturing, Optony Solar.

Suddha Talukdar, Ph.D. conferred February 2004. Currently at Intel.

Yuanqing (Emily) He, Ph.D. conferred February 2006. Currently at Sabic Innovative Plastics.

Ken-Tye Yong, Ph.D. conferred September 2006. Currently Asst. Prof., Nanyang Tech. Univ.

Weili Shi, Ph.D. conferred February 2007. Currently CEO, TECONA (his startup company).

Hongwang Zhang, Ph.D. conferred February 2008. Currently at DKEM.

Hongyi Dang, Ph.D. conferred February 2009. Currently at Aspen Technologies.

Folarin Erogbogbo, Ph.D. conferred June 2009. Asst. Prof., San Jose State University

William Scharmach, Ph.D. conferred June 2011. Currently at Praxair, Inc.

Sha Liu, Ph.D. conferred September 2011. Currently in Boston, MA (stay-at-home mom)

Munish Sharma, Ph.D. conferred September 2013. Currently post-doc at University of Houston

Zhen Liu, M.S. conferred September 2000. Currently at Merck, Philadelphia, PA.

Vi Dat "Victor" Tu, M.S. conferred September 2001. Currently in the U.S. Navy.

Carla Ng, M.S. conferred January 2003. Currently lecturer at ETH Zurich.

Juan Carlos Alva Nieta, M.S. conferred June 2003. Currently at Azko Nobel, Uttrecht

Kar-Chan Choong, M.S. conferred September 2003. Currently at Eli Lily, Indianapolis, IN.

Ajinkya Dighe, M.S. conferred February 2010. Currently at Duraseal, Kansas City, KS.

Chen-An (Roger) Tien, M.S. conferred September 2010. Currently at Delta Electronics, Taiwan

Nithin Ramadurai, M.S. conferred September 2010. Currently at Living Proof, Cambridge, MA

Ching-Wen (Ashley) Chang. M.S. conferred February 2011. Currently at APP Pharmaceuticals, Buffalo.

Pooja (Chakrabarty) Roy, M.S. conferred September 2011. Currently at Amgen, Los Angeles, CA

Gary Martin, M.S. conferred September, 2011. Currently at GEA PHE Systems, Pennsylvania

Digvijay Singh Chauhan, M.S. conferred February 2012. Currently at Unifrax, Niagara Falls, NY

Mark Kaus, M.S. conferred February 2012. Currently at Azota Ltd., Houston, TX

Krystal Lajoie, M.S. conferred February 2013. Currently at Brookhaven National Laboratories

Gauri Dilip Patki, M.S. conferred February 2013.

Vikram Reddy Ardham, M.S. conferred June, 2013, Ph.D. student at ETH, Zurich

Parham Rohani, M.S. conferred September, 2013, Ph.D. student at UB

Biju Mathew, M.Eng. conferred February 2005.

Chin Kok Ooi, M.Eng. conferred February 2005. Currently at Schlumberger, Denver, CO

Rachel Peck, M.Eng. conferred June 2005.

Jeffrey Pierce, M.Eng. conferred June 2005.

Kok On Soh, M.Eng. conferred September 2005.

Current Graduate Students:

Xin Liu, Ph.D. candidate, started January 2009.

Dewei Zhu, Ph.D. candidate, started September 2009.

Xianliang Wang, Ph.D. candidate, started September 2010.

Yue Li, Ph.D. candidate, started September 2010.

Qi Li, Ph.D. candidate, started September 2011.

Parham Rohani, Ph.D. candidate, started January 2012.

Liang Qiao, Ph.D. candidate, started September 2012.

Di Qi, M.S. candidate, started September 2011.

Changning Li, M.S. candidate, started September 2011.

Andrew Mowbray, part-time M.S. candidate, started September 2011.

Saurabh Singh, M.S. candidate, started September 2012.

Shailesh Konda, M.S. candidate, started September 2012.

Michelle Ford, M.Eng. candidate, started September 2012.

Undergraduate researchers for academic credit or through summer programs: Andrew Craft, Jaehoon Jeong, Mark Falinski, Christopher Spengler, Keira Henry, Christina Olgin, Steven Brown, Daniel Salem, Ashley Narain, Bianca Kirkland, Xinyu Wang, Jordan Angie, Paul Garman, David Ramsammy, Janet Oluwole, Jean Kang, Matthew Hill, Demetra McIlwain, Mohammed Attwa, Ben Afriye, Conor Kilcoyne, Belle Cunningham, Larry Lai, Will van

Bramer, Chenxu "Tony" Liu, Kwadjo Asante, Phillip Tucciarone, Nicholas Karker, Michael Demissie, YingYing Kwak, YingHaw Lee, Fenna Wiyasa, Joseph Marchica, Thao Nguyen, Ui Tee Cheah, Jasmine May, Christopher Thomas, Fenna Wiyasa, Daniel DeMonte, Krystal LaJoie, Yudazyco (no surname), Elizabeth Egbetokun, David Galuski, Elizabeth Oluwabunmi, Nikita Petrosyan, Yan Lian Tay, Franklin Yeboah, Brittany Malone, Mary Brummond, Ebun Ayandele, Geraldene Agbasionwe, Carlos Gonzales, Lola Ojurongbe, Sie Siong Wong, Tomiko Stroud, Roshad Coston, Joyce Eleda, Mary Akuamoah-Boateng, Justin Lawliss, Michael Williams, Calvin Setiawan, Mame-efua Afrane, Paul Schneeberger, Mark Rudolph, Misty Pender, Kristen Lane, Folarin Erogbogbo, Brian Peer, Alireza Goodarzi, William Scharmach, Phan Nee Saw, Siew Shee Lim, Ashish Chitalia, Chin Fan Tee, Howard Tan, Siew Chen Mak, Jessica Yee, Christine Balonek, Jeff Pierce, Daniel Kim, Sarah Marshall, Chiemezie Amadi, Thomas Agbanyo, James Tseng, Elijah Kim, and Scott Comstock.

FUNDED RESEARCH AND EDUCATION GRANTS

"Bio-nanocombinatorics to Achieve Precisely-Assembled Multicomponent, Functional Hybrid Nanomaterials", AFOSR, $2,875,000, start date 05/01/2012, duration 60 months, co-PI with P.N. Prasad, M.R. Knecht, T. Walsh, and A. Zhang. Swihart share ~20%.

"Study of reaction mechanisms and mass transport phenomena in carbonyl decomposition", Vale-INCO Canada, $225,000 total costs, start date 12/12/2011, duration 36 months. Swihart share = 100%

"Development of Si(Ge) nanoparticles and nano ink for low cost PV application", Korean Institute for Energy Research, $93,018 total costs, start date 07/01/2011, duration 18 months. Swihart share = 100%

"Third-order Nonlinear Optical Organics", AFOSR, $1,297,656 total costs, start date 06/15/2011, duration 36 months, co-PI with P.N. Prasad, Tobin Marks, and John Reynolds. Swihart share, ~25%.

"GOALI: Flame-based Synthesis of Metal Nanoparticles at Millisecond Residence Times", NSF, $278,811 total costs, start date 03/01/2011, duration 36 months. Swihart share = 100%, co-PI Vassilis Papavassiliou from Praxair supported by Praxair cost-share commitmet not included in above total costs.

"MRI: Acquisition of a Dual Beam/Focused Ion Beam System for Research and Education", NSF, $1,096,411 total costs, start date 08/01/09, duration 12 months, one of three co-PI's with PI Gottfried Strasser. Swihart share ~20%.

"Development of Bottom-Up Chemical Approaches to 3-D Negative Index Meta-Materials", AFOSR, $1,500,000 total costs, start date 04/01/09, duration 60 months, co-PI with PI Paras N. Prasad and co-PI Edward Furlani. Swihart share ~33%.

"Nanoparticle Synthesis using Thermal Nozzle Technology", Praxair, Inc., $50,000 total costs, start date 03/01/09, duration 9 months. Swihart share = 100%

"Synthesis and Production of Nanoparticles of Cesium Dihydrogen Phosphate", SuperProtonic, Inc., $20,852 total costs, start date 07/01/07, duration 3 months. Swihart share = 100%

"Nonconventional Tight-Binding Molecular Dynamics Simulations of Silicon Nanoparticles: Effect of Shape, Surface Termination, and Defects on Electronic Structure", US co-PI with international co-PI Khakimov Zokirkhon Muydinkhonovich of the Institute of Nuclear Physics, Uzbekistan Academy of Sciences, Tashkent, Uzbekistan, funded by The Civilian Research and Development Foundation, $61,200 direct costs, primarily to support travel of the Uzbek team to UB, start date 06/01/07, duration 24 months. Swihart share = 20%

"Continuous Production of Semiconductor Nanoparticles by Spray Pyrolysis", NSF, $280,089 total costs, start date 03/15/07, duration 36 months. Swihart share = 100%

"Nanoparticle Synthesis using Thermal Nozzle Technology", Praxair, Inc., $69,951 total costs, start date 03/01/07, duration 12 months. Swihart share = 100%

"MRI: Acquisition of an Imaging Time of Flight Secondary Ion Mass Spectrometer (ToF-SIMS)," one of 4 co-PI's with PI Joseph Gardella, NSF, $905,195 total costs, start date 07/01/06, duration 24 months. Swihart share = 20%

"Third International Symposium on Gas-Phase and Surface Chemistry of Vapor Phase Materials Processing", NSF, $4,000, start date: 06/01/06, duration 12 months. Swihart share = 100%

"Porous Polymer Gratings for Sensing Applications", co-PI with PI Alexander Cartwright, UB Foundation, Sterbutzel Research Fund, $80,000 direct costs, start date 06/01/05, duration 24 months. Swihart share = 50%

"Biomedical assays based on zinc selenide and silicon luminescent quantum dots", PI with co-PI's Stelios Andreadis, T.J. Mountziaris, and Eli Ruckenstein, UB Foundation, Sterbutzel Research Fund, $70,000 direct costs, start date 06/01/05, duration 24 months. Swihart share = 25%

"Collaborative Research: Detailed Chemical Kinetic Modeling of the Homogeneous Chemical Nucleation of Nanoparticles", PI, funded by NSF, $79,195 direct costs, $120,000 total costs, start date 04/15/05, duration 36 months. Swihart share = 100% (collaborator funded by separate grant)

"MRI: Acquisition of small/wide angle X-ray scattering system for nanomaterials characterization", one of 4 co-PI's with PI Paschalis Alexandridis, $332,090 direct costs, $360,796 total costs, start date, 08/01/04, duration 24 months. Swihart share = 20%

"Experimental parametric study on the preparation of ultrafine (50 – 200 nm diameter) nickel particles by laser driven decomposition of nickel carbonyl", PI, funded by INCO Technical Services, Ltd. (Toronto, Canada), $13,456 direct costs, $24,843 total costs, start date 12/01/03, duration 5 months. Swihart share = 100%

"Synthesis and Characterization of Tellurite Glass Nanoparticles and Nanocomposites for Photonics Applications", PI, with co-PI James O'Reilly, funded by the UB IRCAF program, $28,000 direct costs, start date 11/01/03, duration 12 months. Swihart share = 50%

"Advanced Nanoparticle Technologies for Novel Photodetectors and Emitters", co-PI with PI Vladimir Mitin and co-PI's Frank Bright and Alexander Cartwright, funded by the UB IRCAF program, $40,000 direct costs, start date 11/01/03, duration 12 months. Swihart share = 25%

"Self-consistent tight-binding molecular dynamics simulation of hydrogenated silicon systems", US co-PI with international co-PI Khakimov Zokirkhon Muydinkhonovich of the Institute of Nuclear Physics, Uzbekistan Academy of Sciences, Tashkent, Uzbekistan, funded by The Civilian Research and Development Foundation, $57,000 direct costs, primarily to support travel of the Uzbek team to UB, start date 11/18/03, duration 24 months. Swihart share = 20%

"REU Site: Transdisciplinary Undergraduate Research Initiative On Nanostructured Semiconductors (TURIONS)", PI, with co-PI Alexander Cartwright; NSF, $272,100 direct costs, $306,000 total costs, start date 03/15/03, duration 36 months. MTS managed 100% of the funds, which supported undergraduate researchers working with 10 faculty.

"Synthesis and Characterization of Magnetic Nanoparticles and Assemblies Thereof", PI, with co-PI's Paras Prasad and Hong Luo, funded by UB IRCAF program, $46,000 direct costs, start date 11/01/02, duration 12 months. Swihart share = 40%

"IGERT Biophotonics: Materials and Applications", one of about 25 faculty participants, funded by NSF, $2,685,476 total costs, start date 09/01, duration 60 months. Swihart share = 5%

"On-Line Measurement of Particles Generated in Polysilicon CVD Reactors", PI, funded by Advanced Silicon Materials, Inc (Moses Lake, WA), $64,139 direct costs, $83,957 total costs, start date 05/01/01, duration 16 months. Swihart share = 100%

"Detailed Chemical Kinetic Modeling of the Homogeneous Chemical Nucleation of Nanoparticles", PI with co-PI Linda Broadbelt of Northwestern University. NSF, $319,825 direct costs, $381,999 total costs, start date 11/15/00, duration 48 months. Swihart share = 50%

"Incorporation of Graphical Programming and Automated Data Acquisition into the Chemical Engineering Undergraduate Laboratories", PI, funded by the University at Buffalo Educational Technology Grants Program, $9,800 direct costs, start date 03/01/99, duration 15 months. Swihart share = 100%