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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

Department Chair, Chemical and Biological Engineering, 2018-present

Executive Director, New York State Center of Excellence in Materials Informatics, 2015-2018

UB Distinguished Professor, September 2014-present

Co-Director, New York State Center of Excellence in Materials Informatics, 2012-2015

Director, UB2020 Strategic Strength in Integrated Nanostructured Systems, 2007-2015

Professor, Chemical and Biological Engineering, August 2008-August 2014

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 nanomaterials; Nanomaterial applications in energy; Biomedical applications of nanomaterials; Computational modeling of materials processing; Aerosol reactor engineering; Colloidal chemistry; Silicon chemistry and nanotechnology.

ProOsseous, LLC, Co-Founder, 2017-present

NanoHydroChem, LLC, Co-Founder, 2016-present

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

Fellow of the American Association for the Advancement of Science (2015).

President Emeritus and Mrs. Meyerson Award for Distinguished Undergraduate Teaching and Mentoring, University at Buffalo (SUNY), 2015.

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, 2004, 2008, 2011, 2012, and 2014, 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

Publication Statistics:

Over 225 refereed journal publications, over 60 invited lectures, three edited proceedings volumes, one textbook, five issued U.S. patents

Google Scholar: >13,000 citations, h-index = 60
(https://scholar.google.com/citations?user=d71rLx4AAAAJ&hl=en)

ISI/Web of Science: >9,500 citations, h-index = 50
(http://www.researcherid.com/rid/A-3182-2008)

I. Textbook

1) Smith, J.M., H.C. van Ness, M.M. Abbott, and M.T. Swihart, Introduction to Chemical Engineering Thermodynamics, 8th Ed., McGraw-Hill Education, Dubuque, Iowa, USA (2017).

II. Publications in Refereed Journals:

** indicates corresponding author(s)*

1) Liu, Y., M. Liu, D. Yin, D. Zhu, and M.T. Swihart*, "A general and rapid room-temperature synthesis approach for metal sulphide nanocrystals with tunable properties", *Nanoscale* in press, published online (2019). DOI: 10.1039/C8NR07483F

2) Zhang, R., M.M. Jones, H. Moussa, M. Keskar, N. Huo, Z. Zhang, M.B. Visser, C. Sabatini, M.T. Swihart, and C. Cheng*, "Polymer–antibiotic conjugates as antibacterial additives in dental resins", *Biomaterials Science*, in press, published online (2019). DOI: 10.1039/C8BM01228H

3) Keskar, M., C. Sabatini, C. Cheng, and M.T. Swihart*, "Synthesis and characterization of silver nanoparticle-loaded amorphous calcium phosphate microspheres for dental applications", *Nanoscale Advances*, in press, published online (2019). DOI: 10.1039/C8NA00281A.

4) Zheng, L., Y. Zheng, Y. Liu, S. Long, L. Du, Ji. Liang, C.Z. Huang, M.T. Swihart, K. Tan*, "Core-shell quantum dots coated with molecularly imprinted polymer for selective photoluminescence sensing of perfluorooctanoic acid", *Talanta*, **194**, 1-6 (2019).

5) Liu, Y., H. Zhang, P.K. Behara, X. Wang, D. Zhu, S. Ding, S.P. Ganesh, M. Duipuis*, G. Wu*, and M.T. Swihart*, "Synthesis and Anisotropic Electrocatalytic Activity of Covellite Nanoplatelets with Fixed Thickness and Tunable Diameter", *ACS Applied Materials and Interfaces*, in press, published online (2018). DOI: 10.1021/acsami.8b15895

6) Lawrence, R.L., V.J. Cendan, B. Scola, Y. Liu, C.-K. Lim, P.N. Prasad, M.T. Swihart, and M.R. Knecht*, "Optical Control of Biomimetic Nanoparticle Catalysts Based Upon the Metal Component", *Journal of Physical Chemistry C*, in press, published online (2018). DOI: 10.1021/acs.jpcc.8b07676

7) Liu, Y., D. Zhu, Y. Hu, M.T. Swihart*, and W. Wei*, "Controlled Synthesis of $Cu_{2-x}Se$ Nanoparticles as Near-Infrared Photothermal Agents and Irradiation Wavelength Dependence of their Photothermal Conversion Efficiency", *Langmuir*, **34**, 13905-13909 (2018).

8) Liu, Y., D. Yin, and M.T. Swihart*, "Ag^{+}-Induced Shape and Composition Evolution of Covellite CuS Nanoplatelets to Produce Plate-Satellite and Biconcave-Particle Heterostructures", *Chemistry of Materials*, **30**, 8089-8098 (2018).

9) Lawrence, R.L., Z.E. Hughes, V.J. Cendan, Y. Liu, C.-K. Lim, P.N. Prasad, M.T. Swihart, T.R. Walsh, and M.R. Knecht*, "Optical Control of Nanoparticle Catalysis Influenced by Photoswitch Positioning in Hybrid Peptide Capping Ligands" *ACS Applied Materials and Interfaces*, **10**, 33640-33651 (2018).

10) Konda, S., M.M. Mohammadi, R.D. Buchner, H. Lin, and M.T. Swihart*, "Flame-based Synthesis and *In Situ* Functionalization of Palladium Alloy Nanoparticles", *AIChE Journal*, **64**, 3826-3834 (2018).

11) Yin, D., C. Dun, X. Gao, Y. Liu, X. Zhang, D.L. Carroll, and M.T. Swihart*, "Controllable Colloidal Synthesis of Tin(II) Chalcogenide Nanocrystals and Their Solution-Processed Flexible Thermoelectric Thin Films", *Small*, **14**, 1801949 (2018).

12) Liu, Y., M. Liu, D. Yin, L. Qiao, Z. Fu, and M.T. Swihart*, "Selective Cation Incorporation into Copper Sulfide-Based Nanoheterostructures", *ACS Nano*, **12**, 7803-7811 (2018).

13) Shao, W., C.-K. Lim, Q. Li, M.T. Swihart, and P.N. Prasad*, "Dramatic Enhancement of Quantum Cutting in Lanthanide-Doped Nanocrystals Photosensitized with an Aggregation Induced Enhanced Emission Dye", *Nano Letters*, **18**, 4922–4926 (2018).

14) Kim, Y.I., E. Samuel, B. Joshi, T.G. Kim, M.T. Swihart, and S.S. Yoon*, "Highly Efficient Electrodes for Supercapacitors using Silver-plated Carbon Nanofibers with Enhanced Mechanical Flexibility and Long-term Stability", *Chemical Engineering Journal*, **353**, 189-196 (2018).

15) Kim, M.-W., E. Samuel, K. Kima, H. Yoon, B. Joshi, M.T. Swihart, and S.S.Yoon*, "Tuning the morphology of electrosprayed $BiVO_4$ from nanopillars to nanoferns via pH control for solar water splitting", *Journal of Alloys and Compounds*, **769** 193-200 (2018).

16) Kim, T.-G., E. Samuel, B. Joshi, C.-W. Park, M.-W. Kim, M.T. Swihart, W.Y. Yoon*, and S.S. Yoon*, "Supersonically sprayed rGO−Zn_2SnO_4 composites as flexible, binder-free, scalable, and high-capacity lithium ion battery anodes", *Journal of Alloys and Compounds*, **766**, 331-340 (2018).

17) Kim, M.-W., B. Joshi, E. Samuel, K. Kim, Y.-I. Kim, T.-G. Kim, M.T. Swihart, and S.S. Yoon*, "Highly nanotextured β-Bi_2O_3 pillars by electrostatic spray deposition as photoanodes for solar water splitting", *Journal of Alloys and Compounds*, **764**, 881-889 (2018).

18) Samuel□, E., B. Joshi□, M.-W. Kim□, Y.-I. Kim□, S. Park□, T.-G. Kim□, M.T. Swihart□, W.Y. Yoon□*, and S.S. Yoon*, "Zeolitic imidazolate framework-8 derived zinc oxide/carbon nanofiber as freestanding electrodes for lithium storage in lithium-ion batteries", *Journal of Power Sources*, **395**, 349-357 (2018).

19) Joshi, B., E. Samuel, Y.I. Kim, M.-W. Kim, H.S. Jo, M.T. Swihart, W.Y. Yoon*, and S.S. Yoon*, "Hierarchically designed ZIF-8-derived Ni@ZnO/carbon nanofiber freestanding composite for stable Li storage", *Chemical Engineering Journal*, **351**, 127-134 (2018).

20) Nguyen, M.A., Z. Hughes, Y. Liu, Y. Li, M.T. Swihart, M.R. Knecht*, and T.R. Walsh*, "Peptide-Mediated Growth and Dispersion of Au Nanoparticles in Water via Sequence Engineering", *Journal of Physical Chemistry C*, **122**, 11532-11542 (2018).

21) Jo, H.S., M.-W. Kim, B. Joshi, E. Samuel, H. Yoon, M.T. Swihart, and S.S. Yoon*, "Ni-core CuO-shell Fibers Produced by Electrospinning and Electroplating as Efficient Photocathode Materials for Solar Water Splitting", *Nanoscale*, **10**, 9720-9728 (2018).

22) Rui, Y.*, W. Zhao, D. Zhu, H. Wang. G. Song, M.T. Swihart*, N. Wan, D. Gu, X. Tang, Y. Yang, and T. Zhang, "Understanding the Effects of NaCl, NaBr and Their Mixtures on Silver Nanowire Nucleation and Growth in Terms of the Distribution of Electron Traps in Silver Halide Crystals", *Nanomaterials*, **8**, 161 (2018).

23) Liu, Y., D. Yin, and M.T. Swihart*, Valence Selectivity of Cation Incorporation into Covellite CuS Nanoplatelets, *Chemistry of Materials*, **30**, 1399-1407 (2018).

24) Yin, D., Y. Liu, C. Dun, D. Carroll, and M.T. Swihart*, "Controllable Colloidal Synthesis of Anisotropic Tin Dichalcogenide Nanocrystals for Thin Film Thermoelectrics", *Nanoscale*, **10**, 2533-2541 (2018).

25) Samuel, E., P.U. Londhe, B. Joshi, M.-W. Kim, K. Kim, M.T. Swihart, N.B. Chaure, and S.S. Yoon*, "Electrosprayed graphene decorated with ZnO nanoparticles for supercapacitors", *Journal of Alloys and Compounds*, **741**, 781-791 (2018).

26) Joshi, B., S. Park, E. Samuel, H.S. Jo, S. An, M.-W. Kim, M.T. Swihart, J.M. Yun, K.H. Kim*, and S.S. Yoon*, "Zeolitic imidazolate framework-7 textile-derived nanocomposite fibers as freestanding supercapacitor electrodes", *Journal of Electroanalytical Chemistry*, **810**, 239-247 (2018).

27) Joshi, B., E. Samuel, M.W. Kim, S. Park, M.T. Swihart, W.Y. Yoon*, and S.S. Yoon*, "Atomic-layer-deposited TiO_2-SnZnO/carbon nanofiber composite as a highly stable, flexible and freestanding anode material for lithium-ion batteries", *Chemical Engineering Journal*, **338**, 72-81 (2018).

28) Zhu, L., M.T. Swihart, and H. Lin*, "Unprecedented Size-Sieving Ability in Polybenzimidazole Doped with Polyprotic Acids for Membrane H_2/CO_2 Separation", *Energy & Environmental Science*, **11**, 94 - 100 (2018).

29) Lim, C.-K., Q. Li, T. Zhang, T. Thomay, A.N. Cartwright, M.T. Swihart*, and P.N. Prasad*, "Enhanced Fatigue Resistance of Suppressed Hysteresis in Perovskite Solar Cells by an Organic Crosslinker", *Solar Energy Materials and Solar Cells*, **176**, 30-35 (2018).

30) Kim, M.-W., K. Kim, T.Y. Ohm, H. Yoon, B. Joshi, E. Samuel, M.T. Swihart, S.K. Choi, H. Park, and S.S. Yoon*, "Electrosprayed $BiVO_{\square 4}$ nanopillars coated with atomic-layer-

deposited ZnO/TiO□2 as highly efficient photoanodes for solar water splitting", *Chemical Engineering Journal*, **333**, 721-729 (2018).

31) An, S, Y.I. Kim, H.S. Jo, M.-W. Kim, M.T. Swihart, A.L. Yarin*, and S.S. Yoon*, "Oxidation-resistant metallized nanofibers as transparent conducting films and heaters", *Acta Materialia*, **143**, 174-180 (2018).

32) Yan, L., Y. Liu, Y. Yan, L. Wang, J. Han, Y. Wang, G. Zhou, M.T. Swihart, and X. Xu*, "Improved plasmon-assisted photoelectric conversion efficiency across the entire UV-visible region based on the antenna-on ZnO/Ag 3D nanostructured films", *Nano Research*, **11**, 520-529 (2018).

33) Liu, Y., M. Liu, and M.T. Swihart*, "Shape Evolution of Biconcave Djurleite $Cu_{1.94}S$ Nanoplatelets Produced from $CuInS_2$ Nanoplatelets by Cation Exchange", *Journal of the American Chemical Society*, **139**, 18598-18606 (2017).

34) Wei, M., L. Qiao, H. Zhang, S. Karakalos, K. Maa, Z. Fu, M.T. Swihart*, and G. Wu*, "Engineering reduced graphene oxides with enhanced electrochemical properties through multiple-step reductions", *Electrochimica Acta*, **258**, 735-743 (2017).

35) Samuel, E., B. Joshi, H.S. Jo, Y.I. Kim, M.T. Swihart, J.M. Yun, K.H. Kim*, and S.S. Yoon*, "Flexible and freestanding core-shell SnO_x/carbon nanofiber mats for high-performance supercapacitors", *Journal of Alloys and Compounds*, **728**, 1362-1371 (2017).

36) Kim, M.-W., K. Kim, T.Y. Ohm, B. Joshi, E. Samuel, M.T. Swihart, H. Yoon, H. Park, and S.S. Yoon*, "Mo-doped $BiVO_4$ nanotextured pillars as efficient photoanodes for solar water splitting", *Journal of Alloys and Compounds*, **726**, 1138-1146 (2017).

37) Lee, J.-G., S. An, T.-G. Kim, M.-W. Kim, H.-S. Jo, M.T. Swihart, A.L. Yarin*, and S.S. Yoon*, "Self-cleaning Anti-condensing Glass via Supersonic Spraying of Silver Nanowires, Silica, and Polystyrene Nanoparticles", *ACS Applied Materials and Interfaces*, **9**, 35325-35332 (2017).

38) Joshi, B., E. Samuel, H.S. Jo, Y.-I. Kim, S. Park, M.T. Swihart, W.Y. Yoon*, and S.S. Yoon*, "Carbon Nanofibers Loaded with Carbon Nanotubes and Iron Oxide as Flexible Freestanding Lithium-Ion Battery Anodes", *Electrochimica Acta*, **253**, 479-488 (2017).

39) Zhu, L., M.T. Swihart, and H. Lin*, "Tightening Polybenzimidazole (PBI) Nanostructure via Chemical Cross-linking for Membrane H_2/CO_2 Separation", *Journal of Materials Chemistry A*, **5**, 19914-19923 (2017).

40) Joshi, B., J.-G. Lee, E. Samuel, H.S. Jo, T.-G. Kim, M.T. Swihart, W.Y. Yoon*, and S.S. Yoon*, "Supersonically blown reduced graphene oxide loaded Fe-Fe_3C nanofibers for lithium ion battery anodes", *Journal of Alloys and Compounds*, **726**, 114-120 (2017).

41) Samuel, E. B. Joshi, H.S. Jo, Y.I. Kim, S. An, M.T. Swihart, J.M. Yun, K.H. Kim*, and S.S. Yoon*, "Carbon nanofibers decorated with FeO_x nanoparticles as a flexible electrode material for symmetric supercapacitors", *Chemical Engineering Journal*, **328**, 776–784 (2017).

42) Lee, J.-G., B.N. Joshi, E. Samuel, S. An, M.T. Swihart, J.S. Lee, Y.K. Hwang, J.-S. Chang*, and S.S. Yoon*, "Supersonically sprayed gas- and water-sensing MIL-100(Fe) films, *Journal of Alloys and Compounds*, **722**, 996-1001 (2017).

43) Qiao, L., Z. Fu, J. Li, J. Ghosen, M. Zeng, J. Stebbins, P.N. Prasad, and M.T. Swihart*, "Standardizing Size- and Shape-Controlled Synthesis of Monodisperse Magnetite (Fe_3O_4) Nanocrystals by Identifying and Exploiting Effects of Organic Impurities", *ACS Nano*, **11**, 6370–6381 (2017).

44) Samuel, E., H.S. Jo, B. Joshi, H.G. Park, Y.I. Kim, S. An, M.T. Swihart, J.M. Yun, K.H. Kim*, and S.S. Yoon*, "High-Performance Supercapacitors using Flexible and Freestanding MnO_x/Carbamide Carbon Nanofibers", *Applied Surface Science*, **423**, 210-218 (2017).

45) Zhu, D., M. Liu, X. Liu, Y. Liu, P.N. Prasad*, and M.T. Swihart*, "Au-$Cu_{2-x}Se$ Heterogeneous Nanocrystals for Efficient Photothermal Heating for Cancer Therapy", *Journal of Materials Chemistry B*, **5**, 4934-4942 (2017).

46) Liu, Y., M. Liu, and M.T. Swihart*, "Reversible Phase Interconversion between Covellite CuS and High Chalcocite Cu_2S Nanocrystals", *Chemistry of Materials*, **29**, 4783–4791 (2017).

47) Liu, Y, M. Liu, and M.T. Swihart*, "Plasmonic Copper Sulfide-Based Materials: A Brief Introduction to their Synthesis, Doping, Alloying, and Applications", *Journal of Physical Chemistry C*, **121**, 13435-13447 (2017).

48) An, S., Y.I. Kim, S. Sinha-Ray, M.-W. Kim, H.S. Jo, M.T. Swihart, A.L. Yarin and S.S. Yoon*, "Facile processes for producing robust, transparent, conductive platinum nanofiber mats", *Nanoscale*, **9**, 6076-6084 (2017).

49) He, G.S.*, M. Liu, J.W. Haus, M.T. Swihart, P.N. Prasad, "Strong Stimulated Mie Scattering from Plasmonic CuS Nanocrystals in Toluene or Pentane", *IEEE Journal of Selected Topics in Quantum Electronics*, **23**, 5100706 (2017).

50) Liu, Y., M. Liu, D. Yin, W. Wei, P.N. Prasad, and M.T. Swihart*, "Kuramite Cu_3SnS_4 and Mohite Cu_2SnS_3 Nanoplatelet Synthesis using Covellite CuS Templates with Sn(II) and Sn(IV) Sources", *Chemistry of Materials*, **29**, 3555–3562 (2017).

51) Yu, M., H. Wang, F. Fu, L. Li, J. Li, G. Li, Y. Song, M.T. Swihart, and E. Song, "A Dual Recognition FRET-based Platform for One-Step Sensitive Detection of Pathogenic Bacteria using Fluorescent Vancomycin-Gold Nanoclusters and Aptamer-Gold Nanoparticles", *Analytical Chemistry*, **18**, 4085-4090 (2017).

52) Zou, H.Y., M.X. Gao, T. Yang, Q.L. Zeng, X.X. Yang, F. Liu, M.T. Swihart*, N. Li*, and C.Z. Huang*, "Nonstoichiometric copper chalcogenides for photo-activated alkyne/azide cycloaddition", *Physical Chemistry Chemical Physics*, **19**, 6964-6968 (2017).

53) Lee, J.-G., B.N. Joshi, J.-H. Lee, T.-G. Kim, D.-Y. Kim, S.S. Al-Deyab, I.W. Seong, M.T. Swihart, W.Y. Yoon, and S.S. Yoon*, "Stable High-Capacity Lithium Ion Battery Anodes Produced by Supersonic Spray Deposition of Hematite Nanoparticles and Self-Healing Reduced Graphene Oxide", *Electrochimica Acta,* **228**, 604–610 (2017).

54) Kim, T.-H., S.Y. Park, T.H. Lee, J. Jaeki, D.S. Kim, M.T. Swihart, S. Hyun-Kon, J.Y. Kim, and S. Kim, "ZnO decorated germanium nanoparticles as anode materials in Li-ion batteries", *Nanotechnology*, **28**, 095402 (2017).

55) Joshi, B.N., S. An, Y.I. Kim, E.P. Samuel, K.Y. Song, I.W. Seong, S.S. Al-Deyab, M.T. Swihart, W.Y. Yoon*, and S.S. Yoon*, "Flexible freestanding Fe_2O_3-SnO_x-carbon nanofiber composites for Li ion battery anodes", *Journal of Alloys and Compounds*, **700**, 259-266 (2017).

56) Li, J.-Y., Y. Liu, Q.W. Shu, J.-M. Liang, F. Zhang, X.-P. Chen, X.-Y. Deng, M.T. Swihart, and K.J. Tan*, "One-pot hydrothermal synthesis of carbon dots with efficient up- and down-converted photoluminescence for sensitive detection of morin in a dual-readout assay", *Langmuir*, **33**, 1043–1050 (2017).

57) Liu, J., C. Yang, J. Liu, R. Hu, Y. Hu, H. Chen, W.-C. Law, M.T. Swihart*, L. Ye*, K. Wang*, and K.-T. Yong*, "Effects of Cd-based Quantum Dot Exposure on the Reproduction and Offspring of Kunming Mice over Multiple Generations", *Nanotheranostics*, **1**, 23-37 (2017).

58) Hughes, Z.E., M.A. Nguyen, Y. Li, M.T. Swihart, T.R. Walsh*, and M.R. Knecht*, "Elucidating the Influence of Materials-Binding Peptide Sequence on Au Surface Interactions and Colloidal Stability of Au Nanoparticles", *Nanoscale*, **9**, 421-432 (2017).

59) Park, J.-J., J.G. Lee, D.-Y. Kim, J.-H. Lee, J.H. Yun, J. Gwak, Y.-J. Eo, A. Cho, M.T. Swihart, S.S. Al-Deyab, S.J. Ahn*, D.H. Kim, S.S. Yoon*, "Rapid supersonic spraying of $Cu(In,Ga)(S,Se)_2$ nanoparticles to fabricate a solar cell with 5.49% conversion efficiency", *Acta Materialia*, **123**, 44-54 (2017).

60) Kim, M.-W., H. Yoon, T.Y. Ohm, H.S. Jo, S. An, S.K. Choi, H. Park, S.S. Al-Deyab, B.K. Min, M.T. Swihart, S.S. Yoon*, "Nanotextured Cupric Oxide Nanofibers Coated with Atomic Layer Deposited ZnO-TiO_2 as Highly Efficient Photocathodes", *Applied Catalysis B: Environmental*, **201** 479-485 (2017).

61) Lee, J.-G., D.-Y. Kim, J.-H. Lee, S. Sinha-Ray, A.L. Yarin, M.T. Swihart, D. Kim, and S.S. Yoon*, "Production of Flexible Transparent Conducting Films of Self-fused Nanowires via One-step Supersonic Spraying", *Advanced Functional Materials*, **27**, 1602548 (2017).

62) Qiao, L. and M.T. Swihart*, "Solution-Phase Synthesis of Transition Metal Oxide Nanocrystals: Morphologies, Formulae, and Mechanisms", *Advances in Colloid and Interface Science*, **244** 199-266 (2017).

63) Briggs, B.D., J.P. Palafox-Hernandez, Y. Li, C.-K. Lim, T.J. Woehl, N.M. Bedford, S. Seifert, M.T. Swihart*, P.N. Prasad, T.R. Walsh*, and M.R. Knecht*, "Toward a Modular Multi-material Nanoparticle Synthesis and Assembly Strategy via Bionanocombinatorics:

Bifunctional Peptides for Linking Au and Ag Nanomaterials" *Phys. Chem. Chem. Phys*.,**18** 30845-30856 (2016).

64) Lawrence, R.L., B. Scola, Y. Li, C.-K. Lim, Y. Liu, P.N. Prasad*, M.T. Swihart, and M.R. Knecht*, "Remote Optically Controlled Modulation of Catalytic Properties of Nanoparticles through Reconfiguration of the Inorganic/Organic Interface", *ACS Nano*, **10**, 9470-9477 (2016).

65) Xu, G.X., S. Zeng, B. Zhang, M.T. Swihart*, K.-T. Yong*, and P.N. Prasad*, "New Generation Cadmium-Free Quantum Dots for Biophotonics and Nanomedicine", *Chemical Reviews*, **116**, 12234-12327 (2016).

66) Lim, C.-K. Lim, M.J. Cho, A. Singh, Q. Li, W.J. Kim, H.S. Jee, K.L. Fillman, S.H. Carpenter, M.L. Neidig, A. Baev, M.T. Swihart, P.N. Prasad*, "Manipulating Magneto-Optic Properties of a Chiral Polymer by Doping with Stable Organic Biradicals", *Nano Letters*, **16** 5451–5455 (2016).

67) Law*, W.-C. Law, Z. Xu, K.-T. Yong, X. Liu, M.T. Swihart, M. Seshadri, P.N. Prasad, "Manganese-doped near-infrared emitting nanocrystals for *in vivo* biomedical imaging", *Optics Express*, **24** 17553-17561 (2016).

68) Gupta, S., L. Qiao, S. Zhao, H. Xu, Y. Lin, S.V. Devaguptapu, X. Wang, M.T. Swihart*, G. Wu*, "Highly Active and Stable Graphene Tubes Decorated with FeCoNi Alloy Nanoparticles via a Template-Free Graphitization for Bifunctional Oxygen Reduction and Evolution", *Advanced Energy Materials*, **6**, 1601198 (2016).

69) An, S., H. S. Jo, D.-Y. Kim, H. J. Lee, B.-K. Ju, S. S. Al-Deyab, J.-H. Ahn, Y. Qin, M. T. Swihart, A. L. Yarin, and S. S. Yoon*, "Self-Junctioned Copper Nanofiber Transparent Flexible Conducting Film via Electrospinning and Electroplating, *Advanced Materials*, **28** 7149–7154 (2016).

70) Lee, J.-G. Lee, D.-Y. Kim, J.-H. Lee, M.W. Kim, S. An, H.S. Jo, C. Nervi, S.S. Al-Deyab, M.T. Swihart, and S.S. Yoon*, "Scalable Binder-Free Supersonic Cold Spraying of Nanotextured Cupric Oxide (CuO) Films as Efficient Photocathodes", *ACS Applied Materials and Interfaces*, **8** 15406–15414 (2016).

71) Qiao, L., W. Zhao, Y. Qin, and M.T. Swihart*, "Controlled Growth of a Hierarchical Nickel Carbide "Dandelion" Nanostructure", *Angewandte Chemie*, **128** 8155–8158 (2016).

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33) Kortshagen, U.R., U.V. Bhandarkar, M.T. Swihart, and S.L. Girshick, "Generation and Growth of Nanoparticles in Low-Pressure Plasmas", *Pure and Applied Chemistry*, **71**, 1871-1877 (1999).

34) Girshick, S.L., M.T. Swihart, S.-M. Suh, M.R. Mahajan, and S. Nijhawan, "Numerical Modeling of Gas-Phase Nucleation and Particle Growth during Chemical Vapor Deposition of Silicon", *Proceedings of the Electrochemical Society*, **98-23**, 215-226 (1999).

IV. Book Chapters

1) Mark D. Allendorf, Theodore. M. Besmann, Robert J. Kee and Mark T. Swihart, "Modeling CVD Processes", Chapter 3 (pp. 93-157) in *Chemical Vapor Deposition: Precursors, Processes, and Applications,* edited by Anthony C. Jones and Michael L. Hitchman, Royal Society of Chemistry, 2009.

2) Mark T. Swihart, "Silicon Nanoparticles for Biophotonics", Chapter 4 in *Nanotechnology in Biology and Medicine: Methods, Devices, and Applications*, edited by Tuan Vo Dinh, CRC Press, 2007.

3) Mark T. Swihart, "Constructing Reaction Mechanisms", Chapter 5 in *Modelling of Chemical Reactions*, edited by Robert W. Carr, *Comprehensive Chemical Kinetics, vol. 42*, pp. 185-242, Elsevier, 2007.

V. Proceedings Volumes Edited

1) Swihart, M.T., D. Barreca, R.A. Adomaitis, and K. Wörhoff, Editors, "EuroCVD 17 / CVD 17" (Symposium held at the 2009 Fall ECS Meeting in Vienna, Austria), *ECS Transactions*, **25(8)**, 1324 pp. (2009).

2) Swihart, M. T., R. Schmid, C. Wolden, D.G. Goodwin, and M. Sugiyama Editors. **"***Fundamental Gas-Phase and Surface Chemistry of Vapor-Phase Materials Processing 3"***,** (Symposium held at the 2006 Spring ECS Meeting in Denver, CO.) *ECS Transactions,* **2(7)**, 290 pp. (2007).

3) Swihart, M. T.; Allendorf, M. D.; Meyyappan, M.; Editors. **"***Fundamental Gas-Phase and Surface Chemistry of Vapor-Phase Deposition II and Process Control, Diagnostics, and Modeling in Semiconductor Manufacturing IV" Proceedings of the Electrochemical Society,* **2001-13**, 508 pp. (2001).

VI. Invited Presentations

1) Swihart, M.T., "Laser- and Flame-based Synthesis of Non-Oxide Nanoparticles", 1st Symposium on Nonequilibrium Multiphase Systems", Washington University in St. Louis, Dec. 7, 2018.

2) Swihart, M.T., "Aerosol Synthesis of Nanomaterials for Hydrogen Generation and Purification Applications", Beijing University of Technology, April 25, 2018.

3) Swihart, M.T., "Aerosol Synthesis of Nanomaterials for Hydrogen Generation and Purification Applications", Beijing University of Chemical Technology, April 24, 2018.

4) Swihart, M.T., "Synthesis and Potential Biomedical Applications of Plasmonic Semiconductor Nanostructures", Shenzhen University, China, April 20, 2018.

5) Liu, Y., L. Qiao, and M.T. Swihart, "Recent Progress in Solution-Phase Synthesis of Magnetic Metal Oxide and Plasmonic Semiconductor Nanocrystals", Research Institute of Materials Science, Shanxi Normal University, Linfen, China, April 14, 2018.

6) Swihart, M.T., "Opportunities and Challenges in Using Photoluminescent Silicon Quantum Dots for Bioimaging", Pittcon 2018, Orlando, Florida, February 28, 2018.

7) Swihart, M.T., "Aerosol Synthesis of Nanomaterials for Hydrogen Generation and Purification Applications", Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, November 17, 2017.

8) Swihart, M.T., "Recent Advances in the Synthesis, Interconversion, and Applications of Plasmonic Semiconductor Nanoparticles", Keynote Lecture, 10th International Conference on Nanophotonics, Recife, Brazil, July 3, 2017.

9) Swihart, M.T., "Synthesis and Potential Biomedical Applications of Plasmonic Semiconductor Nanostructures", College of Pharmaceutical Sciences, Southwest University, Chonqing, China, February 21, 2017.

10) Swihart, M.T., "Aerosol Synthesis of Nanomaterials for Hydrogen Generation and Purification Applications", College of Chemistry and Chemical Engineering, Southwest University, Chonqing, China, February 20, 2017.

11) Swihart, M.T., S. Konda, and P. Rohani, "Aerosol Synthesis of Nanomaterials for Hydrogen Generation and Purification Applications", MRS Fall Meeting, Boston, Massachusetts, Nov. 29, 2016.

12) Swihart, M.T., S. Konda, and P. Rohani, "Aerosol Synthesis of Nanomaterials for Hydrogen Generation and Purification Applications", IEEE San Francisco Bay Area Nanotechnology Council, Fall Symposium: Nanotechnology for Energy, Healthcare, and the Environment, Santa Clara, California, November 15, 2016.

13) Swihart, M.T., "Synthesis of New Nanomaterials for Diverse Energy Applications", Ningxia Normal University, Guyuan, China, June 12, 2016.

14) Swihart, M.T., "Synthesis of New Nanomaterials for Diverse Energy Applications", Shanxi Normal University, Linfen, China, June 7, 2016.

15) Swihart, M.T., "Synthesis and Potential Biomedical Applications of Plasmonic Semiconductor Nanostructures", PLA 301 General Hospital, Beijing, China, June 6, 2016.

16) Swihart, M.T., "Synthesis and Potential Biomedical Applications of Plasmonic Semiconductor Nanostructures", Shenzhen University, June 2, 2016.

17) Swihart, M.T. and Ulbrich, M.T., "How Collaborations among the State, Academia, and Industry are Creating Technology Solutions and Driving an Innovative Economy", Association of University Research Parks 2015 Conference, Buffalo, New York, October 1, 2015.

18) Swihart, M.T., "Introduction to UB and New York State Center of Excellence in Materials Informatics Research Capabilities", June 29, 2015, and "Better Living through Nanomaterials", June 30, 2015, Hainan University, Hainan, China.

19) Swihart, M.T., "Plasmonic Copper Chalcogenide-based Colloidal Nanocrystals with Tunable Size, Shape, Composition, and Optical Properties", The 8th International Conference on Nanophotonics (keynote lecture), Changchun, China, May 27, 2015.

20) Swihart, M.T., "Plasmonic Copper Chalcogenide-based Colloidal Nanocrystals with Tunable Size, Shape, Composition, and Optical Properties", Shenzhen University, Shenzhen, China, May 21, 2015.

21) Swihart, M.T., "Better Living through Nanotechnology", UB Insights Program, April 14, 2015.

22) Swihart, M.T., "Synthesis and Potential Applications of Metal and Semiconductor Nanoparticles", Flexible Electronics Workshop, Stony Brook University, August 21, 2014.

23) Swihart, M.T., "Semiconductor Nanocrystals Based on Non-Toxic Earth-Abundant Elements for Optoelectronics", Key Laboratory of Magnetic Molecules and Magnetic Information Materials, Shanxi Normal University (山西师范大学), Linfen, China, July 1, 2014.

24) Swihart, M.T., "Semiconductor Nanocrystals Based on Non-Toxic Earth-Abundant Elements for Optoelectronics", National Laboratory of Solid State Microstructures, Nanjing University (南大), Nanjing, China, June 28, 2014.

25) Swihart, M.T., "Synthesis and Potential Applications of Metal and Semiconductor Nanoparticles", and "Semiconductor Nanocrystals Based on Non-Toxic Earth-Abundant Elements for Optoelectronics", Nanjing University of Science and Technology (南京理工大学), Nanjing, China, June 27, 2014.

26) Swihart, M.T., "Aerosol Synthesis and Potential Applications of Metal and Semiconductor Nanoparticles", Washington University in St. Louis, January 17, 2014.

27) Swihart, M.T., "The Production and Use of Semiconductor Nanocrystals for Optical Bioimaging", The 15th Beijing Conference and Exhibition on Instrumental Analysis, Beijing, China, October 24, 2013.

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

29) 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.

30) 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.

31) 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.

32) Swihart, M.T., "Synthesis and Surface Modification of Nanocrystals of Silicon and other Earth-Abundant Semiconductors for Photovoltaics", Ulsan National Institute of Science and Technology, Ulsan, Korea, January 9, 2012.

33) Swihart, M.T., "Colloids of luminescent silicon nanocrystals: Synthesis, functionalization, and applications in bioimaging", Symposium in Honor of Eli Ruckenstein at 86: Colloid and Surface Chemistry: Looking Back and Looking Forward, American Chemical Society National Meeting, Denver, Colorado, August 28, 2011.

34) Swihart, M.T., "Luminescent Silicon Nanocrystals: Synthesis, Functionalization, and Applications", Photovoltaics Research Center, Korea Institute for Energy Research, Daejeon, Korea, August 24, 2010.

35) Swihart, M.T. "Luminescent Silicon Nanocrystals: Synthesis, Functionalization, and Applications in Bioimaging", Bonsai Project Symposium "Breakthroughs in Nanoparticles for Bio-Imaging", ENEA Research Center of Frascati, Frascati (Rome), Italy, April 9, 2010.

36) Swihart, M.T., F. Erogbogbo, C.A. Tien, S.J. Kim, and A.N. Cartwright, "Synthesis and Surface Modification of Silicon Nanocrystals for Photovoltaics", MRS 2010 Spring Meeting, San Francisco, California, April 6, 2010.

37) Swihart, M.T. "Luminescent Silicon Nanocrystals: Synthesis, Functionalization, and Applications", Department of Chemistry, Tulane University, March 8, 2010.

38) Swihart, M.T., "Synthesis of Metal and Semiconductor Nanoparticles in the Gas Phase", Particle Technology Laboratory, ETH (Swiss Federal Institute of Technology), Zurich, Switzerland, October 12, 2009.

39) Swihart, M.T., "Photoluminescent Silicon Nanocrystals: Aerosol Synthesis, Surface Functionalization, and Applications", Institute of Chemical Biology and State Key Laboratory for Agricultural Microbiology, Huazhong Agricultural University, Wuhan, China, June 26, 2009.

40) Swihart, M.T., "Photoluminescent Silicon Nanocrystals: Aerosol Synthesis, Surface Functionalization, and Applications", Department of Chemistry and Institute of Chemical Biology, Wuhan University, Wuhan, China, June 24, 2009.

41) Swihart, M.T., "Photoluminescent Silicon Nanocrystals: Aerosol Synthesis, Surface Functionalization, and Applications", Department Seminar Series, Chemical Engineering, The University of Massachusetts at Amherst, May 5, 2009.

42) Swihart, M.T., "Biocompatible silicon quantum dots for biophotonics", The Third iCeMS International Symposium: "MESO CONTROL of the cells, by the cells, for the cells", Kyoto, Japan, January 28, 2009.

43) Swihart, M.T., "Photoluminescent Silicon Nanocrystals: Aerosol Synthesis, Surface Functionalization, and Applications", 2nd International Workshop on Semiconductor Nanoparticles for Photovoltaics and Optoelectronics, Duisburg, Germany, December 11, 2008.

44) Swihart, M.T., "Nanoparticle Synthesis", Invited tutorial, American Association of Aerosol Research Annual Meeting, Orlando, Florida, October 20, 2008.

45) Swihart, M.T., and F. Erogbogbo, "Photoluminescent Silicon Nanocrystals: Aerosol Synthesis, Surface Functionalization, and Applications", 91st Canadian Chemistry Conference, Edmonton, Alberta, Canada, May 27, 2008.

46) Swihart, M.T., "Photoluminescent Silicon Nanocrystals: Aerosol Synthesis, Surface Functionalization and Applications", Dept. of Chemical and Biomolecular Engineering, The University of Maryland, Oct. 16, 2007.

47) Swihart, M.T., "Nanoparticle Synthesis in the Swihart Group at The University at Buffalo (SUNY)", General Meeting of the International Fine Particle Research Institute, June 28, 2006, Santa Barbara, California.

48) Swihart, M.T., "Better Living through Nanomaterials: Past, Present, and Future", UB Department of Electrical Engineering, January 27, 2006.

49) Swihart, M.T., "Preparation of Organically-Capped Silicon Quantum Dots", Brockhouse Institute for Materials Research, McMaster University, Ontario, Canada, November 14, 2005.

50) Swihart, M.T., "Vapor-Phase Synthesis of Nanoparticles", China/USA/Japan Joint Chemical Engineering Conference, Beijing, China, October 14, 2005.

51) Swihart, M.T., "Better Living through Nanomaterials: Past, Present, and Future", UB This Summer Lecture Series, June 16, 2005.

52) Swihart, M.T., "Production and Surface Functionalization of Macroscopic Quantities of Brightly Photoluminescent Silicon Nanoparticles and Magnetic Metal Nanoparticles", ECI Conference on "Nanoparticles from the Vapor Phase with Chemical and Biochemical Applications", Davos, Switzerland, August 10, 2004.

53) Li, X., Y. He, and M.T. Swihart, "Production and surface functionalization of macroscopic quantities of brightly photoluminescent silicon nanoparticles", University of Minnesota, IGERT program in nanoparticle technology, March 26, 2004.

54) Li, X., Y. He, and M.T. Swihart, "Production and surface functionalization of macroscopic quantities of brightly photoluminescent silicon nanoparticles", Dow Corning Corporation, Midland, MI, February 16, 2004.

55) Swihart, M.T., "J.B. Wagner Award Address: Assembling Gas-Phase Reaction Mechanisms for High Temperature Inorganic Systems Based on Quantum Chemistry Calculations and Reaction Rate Theories", 204th meeting of the Electrochemical Society, October 14, 2003, Orlando, Florida.

56) Swihart, M.T., "High-Rate Synthesis and Characterization of Brightly Luminescent Silicon Nanoparticles with Applications in Hybrid Materials for Photonics and Biophotonics", presented at a symposium entitled "Organic and Hybrid Materials for Nanophotonics" at the 48th Annual Meeting of the SPIE, August 4-5, 2003, San Diego, California.

57) Swihart, M.T., "Assembling Gas-Phase Reaction Mechanisms for High Temperature Inorganic Systems Based on Quantum Chemistry Calculations and Reaction Rate Theories", presented as an *invited keynote lecture* at The IUPAC Conference on High Temperature Materials Chemistry – XI, May 19-23, 2003, Tokyo, Japan.

58) Swihart, M.T., “Preparing and Functionalizing Macroscopic Quantities of Brightly Photoluminescent Silicon Nanoparticles with Emission Spanning the Visible Spectrum”, May 20, 2003, Department of Chemical Systems Engineering, University of Tokyo.

59) Swihart, M.T., "High-Rate Synthesis, Characterization, and Potential Applications of Brightly Luminescent Silicon Nanoparticles", at the International Symposium on Structure and Dynamics of Heterogeneous Systems, Gerhard-Mercator-Universität Duisburg, November 29, 2002, Duisburg, Germany.

60) Swihart, M.T., “Experimental and Modeling Studies on the Nucleation and Growth of Silicon Nanoparticles from the Vapor Phase”, IT Collaboratory Teleconference Series, Held at University at Buffalo and broadcast to Rochester Institute of Technology and Alfred University, January, 2002.

61) Swihart, M.T., “Experimental and Modeling Studies on the Nucleation and Growth of Silicon Nanoparticles from the Vapor Phase”, Department of Electrical Engineering, University at Buffalo, April, 2002.

62) Swihart, M.T. "Chemical Kinetic Studies of the Homogeneous Chemical Nucleation of Silicon Nanoparticles", at a workshop entitled "Precursor materials, clusters and nanoparticles: Experiment and theory", Gerhard-Mercator-Universität Duisburg, October 5, 2000, Duisburg, Germany.

VI. Patents and Patent Applications

1) Rohani, P., and M.T. Swihart, “Silicon-Carbon Nanomaterials, Method of Making Same, and Methods of Using Same”, provisional application, filed February 18, 2018. Optioned to NanoHydroChem, LLC.

2) Rohani, P., and M.T. Swihart, “Boron nanoparticle compositions and methods for making and using the same”, pending application PCT/US2016/055757, filed October 6, 2016. Optioned to NanoHydroChem, LLC.

3) Yong, K.-T., Y. Sahoo, M.T. Swihart, and P.N. Prasad, “Non-Spherical Semiconductor Nanocrystals and Methods of Making Them”, U.S. Patent App. No., filed August 16, 2007. Licensed to Solexant Corporation.

4) Swihart, M.T., X. Li, and Y. He, “Production of nickel nanoparticles from a nickel precursor via laser pyrolysis”, U.S. Patent App. No. 20060225534, filed October 12, 2006, licensed to INCO.

5) Ruckenstein, E., M.T. Swihart, and F. Hua, “Production of Photoluminescent Silicon Nanoparticles having Surfaces that are Essentially Free of Residual Oxygen”, U.S. Patent No. 8,029,698 (2011).

6) Park, Y., R. Dziak, R. Genco, M.T. Swihart, and H. Periopanayagam, “Calcium Sulfate Based Nanoparticles”, U.S. Patent No. 7,767,226 (2010). Optioned to ProOsseus, LLC.

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

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

9) 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).

UNIVERSITY AND PROFESSIONAL SERVICE

I. Professional and Public Service

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

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

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

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

Manuscript reviewer for *Nature, Science, Nature Nanotechnology, Nature Communications, Advanced Materials, Angewandte Chemie, Nano Letters, Advanced Functional Materials, Advanced Energy Materials, ACS Nano, Journal of the American Chemical Society, Chemical Society Reviews, Accounts of Chemical Research, Science Translational Medicine, Advanced Optical Materials, Scientific Reports, Chemistry of Materials, Small, Chemical Communications, Nanoscale, ACS Applied Materials & Interfaces, Langmuir, The Journal of Physical Chemistry (A, B, C, and Letters), Journal of Materials Chemistry (A, B), Bioconjugate Chemistry, Applied Physics Letters, Industrial and Engineering Chemistry Research, AIChE Journal, Chemistry: An Asian Journal, Chemistry: A European Journal, The Journal of Chemical Physics, PhysChemChemPhys, RSC Advances, The Journal of the Electrochemical Society, Nanomedicine, The Journal of Materials Science, Sensors and Actuators B, Chemical Vapor Deposition, Nanotechnology, The International Journal of Chemical Kinetics, The Journal of Crystal Growth, Crystal Growth and Design, CrystEngComm, The Journal of Computational Chemistry, Journal of Biophotonics, Biophysical Journal, Journal de Physique IV, The Journal of Aerosol Science, Analytical Chemistry, Aerosol Science and Technology, Materials Letters, The Journal of Nanoparticle Research, Surface Science, The Journal of Applied Physics, Applied Physics Letters, Nanoscale Research Letters, Physica E, Canadian Journal of Chemistry, Journal of Visualized Experiments, The Journal of Nanophotonics, Chemical Engineering Journal, The Journal of Thermal Spray Technology, The International Journal of Chemical Reaction Engineering, The Journal of Colloid and Interface Science, Colloids and Surfaces A, Materials, Colloids and Surfaces B, Applied Catalysis B, Optics Express, Plasma Chemistry and Plasma Processing, Ceramics International, Computational Materials Science,* 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), National Science Center of Poland, and The U.S. Civilian Research and Development Foundation.

Conference Chair, 2016 Annual Meeting of the American Association for Aerosol Research, 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.

II. University Service

Department Chair, Chemical and Biological Engineering (2018-present)

Senator, UB Faculty Senate, (2015-present)

Executive Director, New York State Center of Excellence in Materials Informatics (2015-2018)

Member, Faculty Senate Budget Priorities Committee (2015-present)

Co-Director, New York State Center of Excellence in Materials Informatics (2012-2015)

Director, UB2020 Strategic Strength in Integrated Nanostructured Systems (2007-2015)

Director of Graduate Studies for Chemical and Biological Engineering (2003-2007, 2011-2013)

Member of the A.A. Schomburg Fellowship selection committee (2006-2013)

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).

ORGANIZATIONAL MEMBERSHIPS

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

FORMAL TEACHING ACTIVITIES

Summer 2018:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 18 students).

Summer session offering of this required, core undergraduate course in chemical engineering thermodynamics.

Fall 2017:

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 seventh time.

Summer 2017:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 10 students).

- Summer session offering of this required, core undergraduate course in chemical engineering thermodynamics.

Fall 2016:

Instructor, CE 456/556, Introduction to Aerosol Science and Technology, University at Buffalo, (3 credits, enrollment: 14 students).

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

Summer 2016:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 28 students).

- Summer session offering of this required, core undergraduate course in chemical engineering thermodynamics.

Spring 2015:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 91 students).

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

Fall 2014:

Instructor, CE 456/556, Introduction to Aerosol Science and Technology, University at Buffalo, (3 credits, enrollment: 28 students).

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

Spring 2014:

Instructor, CE 304, Chemical Engineering Thermodynamics, University at Buffalo, (4 credits, enrollment: 86 students).

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 2013:

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 CEO, Optony Solar.

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

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

Ken-Tye Yong, Ph.D. conferred September 2006. Currently Associate Professor at Nanyang Tech. Univ.

Weili Shi, Ph.D. conferred February 2007. Currently CEO at DK Electronic Materials

Hongwang Zhang, Ph.D. conferred February 2008. Currently Senior Scientist at DK Electronic Materials

Hongyi Dang, Ph.D. conferred February 2009. Currently Senior Process Engineer at Technip, Houston, TX.

Folarin Erogbogbo, Ph.D. conferred June 2009, Currently Assistant Professor at San Jose State University

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

Sha Liu, Ph.D. conferred September 2011. Currently Sales Engineer at Kemlab

Munish Sharma, Ph.D. conferred September 2013. Currently Senior R&D Engineer at UOP Honeywell R&D

Xin Liu, Ph.D. conferred February 2014, Currently Process Engineer at Applied Materials

Xianliang Wang, Ph.D. conferred September 2015, Currently Applications Engineer at New York State Center of Excellence in Materials Informatics

Yue Li, Ph.D. conferred February, 2016, Currently at Zhejiang University

Dewei Zhu, Ph.D. conferred June 2016, Currently at UB

Qi Li, Ph.D. conferred September 2017, Currently at Energy Materials Corp.

Shailesh Konda, Ph.D. conferred February 2018, Currently TD Module Engineer at Intel

Liang Qiao, Ph.D. conferred February 2018, Currently Post-Doc at Rice University

Parham Rohani, Ph.D. conferred June 2018, Currently CEO of NanoHydroChem, LLC

Yang Liu, Ph.D. conferred September 2018

Deqiang Yin, Ph.D. conferred September 2018

Zhen Liu, M.S. conferred September 2000. Currently Associate Principal Scientist at Merck

Vi Dat "Victor" Tu, M.S. conferred September 2001. Currently at US EPA.

Carla Ng, M.S. conferred January 2003. Currently Assistant Prof. at University of Pittsburgh.

Juan Carlos Alva Nieta, M.S. conferred June 2003. Currently at Global Business Manager for Thioplast at Akzo Nobel

Kar-Chan Choong, M.S. conferred September 2003. Currently Associate Consultant at Eli Lily

Ajinkya Dighe, M.S. conferred February 2010. Currently Chemical Process Engineer at Godrej Industries Limited.

Chen-An (Roger) Tien, M.S. conferred September 2010. Currently Procurement Manager at Hewlett-Packard Enterprise

Nithin Ramadurai, M.S. conferred September 2010. Currently Senior Engineer at Olivo Labs, LLC/Living Proof, Inc.

Ching-Wen (Ashley) Chang. M.S. conferred February 2011. Currently R&D Engineer at Lightlab Asia/Sweden AB

Pooja (Chakrabarty) Roy, M.S. conferred September 2011. Currently Process Engineer at Herbalife

Gary Martin, M.S. conferred September, 2011. Currently Applications Engineer at Aether DBS

Digvijay Singh Chauhan, M.S. conferred February 2012. Currently Development Engineer at Unifrax

Mark Kaus, M.S. conferred February 2012. Currently Process Engineer at Azota Ltd.

Krystal Lajoie, M.S. conferred February 2013. Currently Process Engineer at Solvay

Gauri Dilip Patki, M.S. conferred February 2013. Currently Research Chemist at Aptapharma, Inc.

Vikram Reddy Ardham, M.S. conferred June, 2013, Currently Ph.D. student at TU Darmstadt

Parham Rohani, M.S. conferred September, 2013, Currently Ph.D. student Chemical & Biological Engineering at UB

Di Qi, M.S. conferred June, 2014, currently at ThermoFisher Scientific.

Changning Li, M.S. conferred June 2014. Currently Ph.D. student in Biomedical Engineering at UB

Saurabh Singh, M.S. conferred September 2014. Currently Semiconductor Research Engineer at IBM T.J. Watson Research Center

Yujie Ke, M.S. conferred June 2015. Currently Ph.D. student at Nanyang Technological University

Christopher Miller, M.S. conferred September 2015. Currently Process Engineer at Wacker Chemie.

Andrew Mowbray, M.S. conferred September 2015.

Najing Li, M.S. conferred June 2016.

Liang Guo, M.S. conferred September 2017.

Zheng Fu, M.S. conferred September 2017. Currently Ph.D. student at UB

Mayuresh Keskar, M.S. conferred June 2018.

Santosh Gunturi, M.S. conferred June 2018.

Ruijuan Yin, M.S. conferred June 2018.

Shikuan Shao, M.S. conferred September 2018.

Biju Mathew, M.Eng. conferred February 2005. Currently Project Engineer at Nestle S.A.

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

Rachel Peck, M.Eng. conferred June 2005.

Jeffrey Pierce, M.Eng. conferred June 2005. Currently Senior Project Engineer at Javan Engineering

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

Perry Pacouloute, M.Eng. conferred February 2009. Currently Project Engineer at Praxair

Michelle Ford, M.Eng. conferred February 2014.

Yong Joon Lee, M.Eng. conferred June 2015.

Xiang Gao, M.Eng. conferred September 2015.

Ming Zeng, M.Eng. conferred June 2016.

Xiang Gao, M.Eng. conferred June 2018.

Current Graduate Students:

Mohammadmoein Mohammadi, Ph.D. candidate, started September 2015

Zheng Fu, Ph.D. candidate, started September 2015

Mohammad Malek Zadeh, Ph.D. candidate, started September 2016

Abhishek Kumar, Ph.D. candidate, started September 2017

Priyanshu Vishnoi, Ph.D. candidate, started September 2018

Adam Raszewski, Ph.D. candidate, started September 2018

Saranya Pillai, M.S. candidate, started January 2017

Naveshkaanth Alexander, M.S. candidate, started January 2017

Bhoomika Jayesh Sheth, M.S. candidate, started January 2017

Anirudh Raghavan, M.S. candidate, started September 2017

Suyash Nagpurkar, M.S. candidate, started September 2017

Yan Li, M.S. candidate, started January 2018

Chintan Shah, M.S. candidate, started September 2018

Shema Rachel Abraham, M.S. candidate, started September 2018

Undergraduate researchers for academic credit or through summer programs: Dilakshana Ranjit, Yan Chen, Lakshay Chopra, Shashank Negi, Jacob O'Connor, Zhengxi Xuan, Sushanta Ray, Steven Li, Jimmy Wu, Adam Raszewski, Steven Setang, Fatou Cisse, John Stebbins, Abdul-Malik Davies, Lixiao Xu, Mark Pitman, Enzo Benfanti, Tanahiry Escamilla, Maisa Khaja, Mohammed Zaid, John Ghosen, Charles Darku, Zachary Wong, Kevin Jock, 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.

Visiting Researchers:

Hongyu Wang, Associate Professor, Nanjing University of Posts and Telecommunications

Peng Li, Ph.D. candidate, Jilin University

Li Zhang, Associate Professor, Nanchang University

Yujuan Cao, Associate Professor, South China Normal University

Hongyan Zou, Assistant Professor, Southwest University

Kejun Tan, Professor, Southwest University

Hui Liu, Assistant Professor, Southwest University

Wenxia Zhao, Assistant Professor, Ningxia Normal University

Yunjun Rui, Associate Professor, Nanjing University of Science and Technology

Lin Tao, Ph.D. student, Nanjing University

Sampa Chakrabarti, Associate Professor, University of Calcutta

Oscar Bomati-Miguel, researcher, University of Aragon (currently Universidad Autonoma de Madrid)

Anoop Gupta, Ph.D. student, University of Duisburg-Essen (currently at BASF)

Seiichi Sato, Assistant Professor, Hyogo University

Songbeom Kim, Ph.D. student, KAIST (currently at UNIST, Ulsan, Korea)

Adil Mukhtarov, Professor, Institute of Nuclear Physics, Tashkent, Uzbekistan

Polina Tereshchuk, Ph.D. student, Institute of Nuclear Physics, Tashkent, Uzbekistan (currently at University of Sao Paulo, Brazil)

Zakir Khakimov Professor, Institute of Nuclear Physics, Tashkent, Uzbekistan (deceased)

FUNDED RESEARCH AND EDUCATION GRANTS

"Manufacturing USA: GOALI: Designing Catalytic Membrane Reactors (CMRs) for Low Temperature CO2 Utilization and Methane Dry Reforming", PI with co-PIs Haiqing Lin and Carl Lund, NSF, $360,000, 09/01/2018-08/31/2021.

"Planning Grant: Engineering Research Center for Responsive, Efficient, Livable, and Independent Sunlight-enabled Habitats (RELISH)", PI with co-PIs Martha Bohm, Quanxi Jia, Paras Prasad, and Krishna Rajan, NSF, $100,000, 09/01/2018-08/31/2019.

"SUNY Center-Scale Proposal Planning and Development Grant to support development of a Center for Photon Conversion Technology", SUNY, $50,000, 07/01/2018-06/30/2020.

"Sorption Enhanced Mixed Matrix Membranes for Hydrogen Purification and Carbon Dioxide Capture", co-PI with PI Haiqing Lin, DOE-NETL, $1,470,099, 10/01/15-12/31/18.

"New York State Center of Excellence in Materials Informatics (nominal PI on economic development award, only a small fraction supports Swihart group activities)" New York State (Empire State Development, via NYSTAR), $3,872,000, 07/01/14-06/30/18

"Flexible Electronics" SUNY Network of Excellence in Materials and Advanced Manufacturing, UB PI, SUNY RF, $60,000 (direct costs, UB share), 04/01/14-06/30/16.

"MRI: Development of an Instrument for Quantitative Characterization of Behavior of Magnetic Particles and Magnetically-Labeled Biomaterials in Emerging Applications," NSF, $764,736 (70% from NSF, 30% UB cost-share), start date 09/01/13, duration 36 months, PI with 3 co-PIs, Swihart share ~25%.

"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 commitment 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%